



Service Manual

# Service Manual

## GM730/GM735



Model : GM730/GM735



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# 1. INTRODUCTION

## 1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

## 1.2 Regulatory Information

### A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that result from such unauthorized use.

### B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

### C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the phones or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

### D. Maintenance Limitations

Maintenance limitations on the phones must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.



# 1. INTRODUCTION

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## E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

## F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

## G. Interference and Attenuation

A phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

## H. Electrostatic Sensitive Devices

### ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the  sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

## 2. PERFORMANCE

### 2.1 System Overview

	Type / Spec.	
1. Phone Type	Bar Type	
2. Size	109.8 x 56.5 x 11.9 (mm)	
3. Weight	106g	
4. Power	1000mAh (Li-Ion)	
5. MSM Chipset	MSM7200A, RTR6285, PM7540	
6. Memory	4Gb(Flash) / 2Gb(SDRAM) /User Memory : 100 MB(TBD)	
7. LCD	Size	3 inch
	Dot	400 x 240
	Color	262,000
	Display Type	a-Si TFT, Trans missive
	NTSC	Min. 65%, Typ. 70%
	Contrast Ratio	Typ. 400:1
	Pixel Pitch	0.162mm
8. Main Camera (3M)	Type	CMOS image sensor
	Resolution	2592(H) X 1944(V) pixels. WQVGA
	Frame Rate	30 fps at Preview mode
	Digital Zoom	Progressive, <=X2
	Image Scaling Down	SXGA, VGA, QVGA, CIF, QCIF
	Video	400x240 / 176x144,
9. Audio	1) MIDI	72poly, SW MIDI
	2) Mono	18x12 oval type speaker
	3) Receiver	Speaker/Receiver
10. Bluetooth		1m
11. WLAN		IEEE 802.11b/g
	Throughput	4Mbps
		50 ~ 200m

## 2. PERFORMANCE

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### 2.2 Usable environment

#### 1) Environment

Item	Specification
Voltage	3.7 (Typ), 4.2 (Max)V
Operation Temp	-20 ~ +60°C
Storage Temp	-30 ~ +85°C
Humidity	65 % (Max)

#### 2) Environment (Accessory)

Reference	Spec.
TA Power	AC 110 ~ 240V, 60Hz

### 2.3 Radio Performance

#### 1) Transmitter - GSM Mode

Item	Specification
Phase Error	RMS : 5° Peak : 20 °
Frequency Error	GSM : 0.1 ppm DCS/PCS : 0.1 ppm
EMC(Radiated Spurious Emission Disturbance)	GSM/DCS : < -28dBm
Transmitter Output power and Burst Timing	GSM : 5dBm – 33dBm ± 3dB DCS/PCS : 0dBm – 30dBm ± 3dB
Burst Timing	<3.69us
Spectrum due to modulation out to less than 1800kHz offset	200kHz : -36dBm 600kHz : -51dBm/-56dBm
Spectrum due to modulation out to larger than 1800kHz offset to the edge of the transmit band	GSM : 1800-3000kHz : < -63dBc(-46dBm) 3000kHz-6000kHz : < -65dBc(-46dBm) 6000kHz < : < -71dBc(-46dBm) DCS : 1800-3000kHz : < -65dBc(-51dBm) 6000kHz < : < -73dBc(-51dBm)
Spectrum due to switching transient	400kHz : -19dBm/-22dBm(5/0), -23dBm 600kHz : -21dBm/-24dBm(5/0), -26dBm
Reference Sensitivity – TCH/FS	Class II(RBER) : -105dBm(2.439%)
Usable receiver input level range	0.012(-15 - -40dBm)
Intermodulation rejection – Speech channels	± 800kHz, ± 1600kHz : -98dBm/-96dBm (2.439%)
AM Suppression -GSM : -31dBm - DCS : -29dBm	-98dBm/-96dBm (2.439%)
Timing Advance	± 0.5T

## 2. PERFORMANCE

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### 2) Transmitter - WCDMA Mode

Item	Specification
Transmit Frequency	WCDMA850 : 824 MHz ~ 849 MHz WCDMA900 : 880 MHz ~ 915MHz WCDMA1900 : 1850 ~1910 MHz WCDMA2100 : 1920 MHz ~ 1980 MHz
Maximum Output Power	+24 dBm / 3.84 MHz, +1 / -3 dB
Frequency Error	within $\pm 0.1$ PPM
Open Loop Power Control	Normal Conditions : within $\pm 9$ dB, Extreme Conditions : within $\pm 12$ dB
Minimum Transmit Power	< -50 dBm /3.84 MHz
Occupied Bandwidth	< 5 MHz at 3.84 Mcps (99% of power)
Adjacent Channel Leakage Power Ratio (ACLR)	> 33 dB @ $\pm 5$ MHz, > 43 dB @ $\pm 10$ MHz
Spurious Emissions $ f - f_c  > 12.5$ MHz	< -36 dBm / 1 kHz RW @ $9 \text{ kHz} \leq f < 150 \text{ kHz}$ < -36 dBm / 10 kHz RW @ $150 \text{ kHz} \leq f < 30 \text{ MHz}$ < -36 dBm / 100 kHz RW @ $30 \text{ MHz} \leq f < 1 \text{ GHz}$ < -30 dBm / 1 MHz RW @ $1 \text{ GHz} \leq f < 12.75 \text{ GHz}$ < -41 dBm / 300 kHz RW @ $1893.5 \text{ MHz} < f < 1919.6 \text{ MHz}$ < -67 dBm / 100 kHz RW @ $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$ < -79 dBm / 100 kHz RW @ $935 \text{ MHz} < f \leq 960 \text{ GHz}$ < -71 dBm / 100 kHz RW @ $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$
Transmit Intermodulation	< -31 dBc @ 5 MHz & < -41 dBc @ 10 MHz when Interference CW Signal Level = -40 dBc
Error Vector Magnitude	< 17.5 %, when Pout $\geq$ -20 dBm
Peak Code Domain Error	< -15 dB at Pout $\geq$ -20 dBm

### 3) Receiver - WCDMA Mode

Item	Specification
Receive Frequency	WCDMA850 : 849 MHz ~ 894 MHz WCDMA900 : 925MHz ~ 960 MHz WCDMA1900 : 1930 ~1990 MHz WCDMA2100 : 2110 ~ 2170 MHz
Reference Sensitivity Level	BER < 0.001 when $\hat{I}_{or} = -106.7$ dBm / 3.84 MHz
Maximum Input Level	BER < 0.001 when $\hat{I}_{or} = -25$ dBm / 3.84 MHz
Adjacent Channel Selectivity (ACS)	ACS > 33 dB where BER < 0.001 when $\hat{I}_{or} = -92.7$ dBm / 3.84 MHz & $I_{oac} = -52$ dBm / 3.84 MHz @ $\pm 5$ MHz
Blocking Characteristic	BER < 0.001 when $\hat{I}_{or} = -103.7$ dBm / 3.84 MHz & $I_{blocking} = -56$ dBm / 3.84 MHz @ $F_{uw}(\text{offset}) = \pm 10$ MHz or $I_{blocking} = -44$ dBm / 3.84 MHz @ $F_{uw}(\text{offset}) = \pm 15$ MHz
Spurious Response	BER < 0.001 when $\hat{I}_{or} = -103.7$ dBm / 3.84 MHz & $I_{blocking} = -44$ dBm
Intermodulation	BER < 0.001 when $\hat{I}_{or} = -103.7$ dBm / 3.84 MHz & $I_{ouw1} = -46$ dBm @ $F_{uw1}(\text{offset}) = \pm 10$ MHz & $I_{ouw2} = -46$ dBm / 3.84 MHz @ $F_{uw2}(\text{offset}) = \pm 20$ MHz
Spurious Emissions	< -57 dBm / 100 kHz BW @ $9 \text{ kHz} \leq f < 1 \text{ GHz}$ < -47 dBm / 1 MHz BW @ $1 \text{ GHz} \leq f \leq 12.75 \text{ GHz}$
Inner Loop Power Control In Uplink	Adjust output(TPC command) cmd    1dB       2dB       3dB +1    +0.5/1.5   +1/3    +1.5/4 0     -0.5/+0.5   -0.5/+0.5   -0.5/+0.5 -1    -0.5/-1.5   -1/-3    -1.5/-4 group(10equal command group) +1       +8/+12    +16/+24

## 2. PERFORMANCE

### 4) Transmitter - HSDPA Mode

Item	Specification				
Transmit Frequency	824 MHz ~ 849 MHz 880 MHz ~ 915 MHz 1850MHz ~ 1910 MHz 1920 MHz ~ 1980 MHz				
Maximum Output Power	Sub-Test 1=1/15, 2=12/15      21~25dBm / 3.84 MHz 3=13/15 4=15/8      20~25dBm / 3.84 MHz 5=15/7 6=15/0      19~25dBm / 3.84 MHz				
HS-DPCCH	Sub-test in table C.10.1.4	Power step	Power step slot boundary	Power step size, P [dB]	Transmitter power step tolerance [dB]
	5	1	Start of Ack/Nack	6	+/- 2.3
		2	Start of CQI	1	+/- 0.6
		3	Middle of CQI	0	+/- 0.6
		4	End of CQI	5	+/- 2.3
Spectrum Emission Mask	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0				
	Frequency offset from carrier $\Delta f$		Minimum requirement	Measurement Bandwidth	
	2.5 ~ 3.5 MHz		-35-15 $\times$ ( $\Delta f$ -2.5)dBc	30 kHz	
	3.5 ~ 7.5 MHz		-35-1 $\times$ ( $\Delta f$ -3.5)dBc	1 MHz	
	7.5 ~ 8.5 MHz		-35-10 $\times$ ( $\Delta f$ -7.5)dBc	1 MHz	
	8.5 ~ 12.5 MHz		-49dBc	1 MHz	
Adjacent Channel Leakage Power Ratio (ACLR)	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0 > 33 dB @ $\pm$ 5 MHz > 43 dB @ $\pm$ 10 MHz				
Error Vector Magnitude	3GPP Not Complete				

**5)Receiver - HSDPA Mode**

Item	Specification
Receive Frequency	849 MHz ~ 894 MHz 925 MHz ~ 960 MHz 1930 MHz ~1990 MHz 2110 ~ 2170 MHz
Maximum Input Level (BLER or R), 16QAM Only	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0 BLER < 10% or R >= 700kbps

**2.4 Current Consumption****1) Current Consumption**

	Stand by		Voice Call	VT
	Bluetooth Off	Bluetooth Connected		
WCDMA Only	3.0 mA ↓ (DRX=1.28)	4.5 mA ↓ (DRX=1.28)	240 mA ↓ (TX=12dBm low)	N/A
GSM Only	2.7 mA ↓ (Paging= 5 period)	4.2 mA ↓ (Paging= 5 period)	270 mA ↓ (TX Power Level 5)	

(Stand by and Voice Call Test Condition : Bluetooth off, LCD backlight off,Neighbor Cell off) (VT Test Condition : Speaker off, LCD backlight On)



## 2. PERFORMANCE

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### 2.5 RSSI BAR

Level Change	WCDMA	GSM
BAR 4 → 3	$-82 \pm 2$ dBm	$-91 \pm 2$ dBm
BAR 3 → 2	$-92 \pm 2$ dBm	$-96 \pm 2$ dBm
BAR 2 → 1	$-102 \pm 2$ dBm	$-101 \pm 2$ dBm
BAR 1 → 0	$-112 \pm 2$ dBm	$-106 \pm 2$ dBm

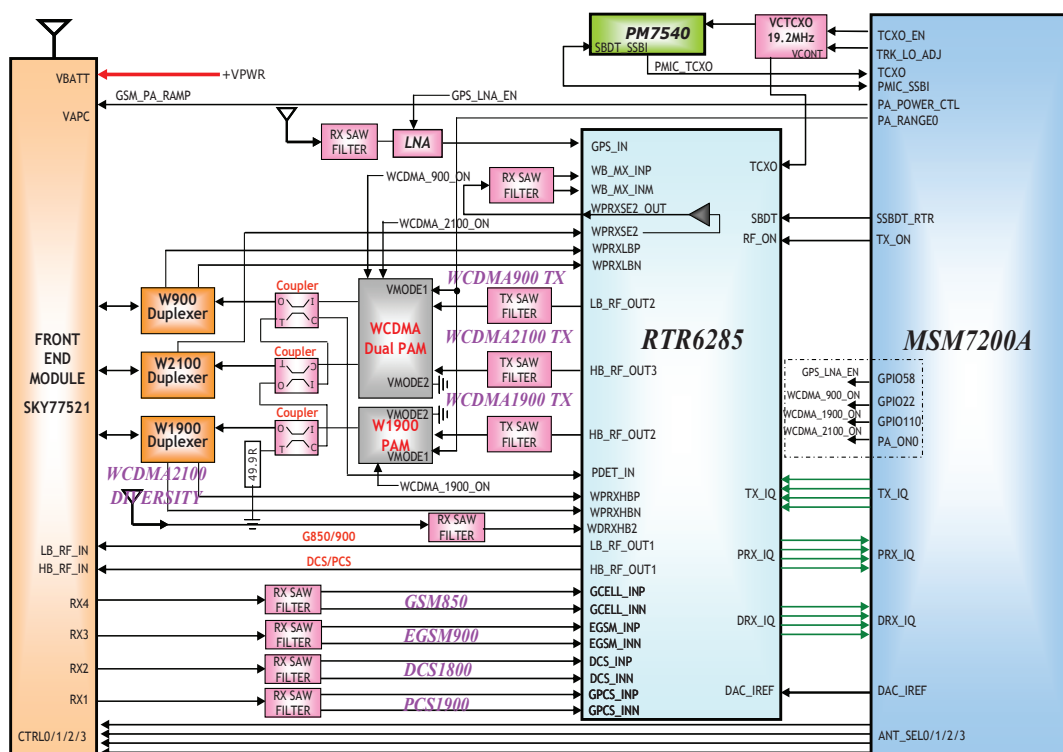
### 2.6 Battery BAR

Indication	Standby
Bar 4 → 3	72%
Bar 3 → 2	47%
Bar 2 → 1	25%
Bar 1 → 0	5%
Low Battery Alarm	15%
Critical Low Battery Alarm	5%
POWER OFF	0%

## 3. TECHNICAL BRIEF

### 3.1. GENERAL DESCRIPTION

The GM730/GM735 supports UMTS-900(Band VIII), UMTS-1900(Band II), UMTS-2100(Band I), GSM-850, GSM-900, GSM-1800, and GSM-1900 based GSM/GPRS/EDGE/UMTS. All receivers and the UMTS transmitter use the radioOne1Zero-IF architecture to eliminate intermediate frequencies, directly converting signals between RF and baseband. The quad-band GSM transmitters use a baseband-to-IF up-conversion followed by an offset phase-locked loop that translates the GMSK-modulated or 8-PSK-modulated signal to RF.



[Figure 1-1] Block diagram of RF part

A generic, high-level functional block diagram of GM730/GM735 is shown in Figure 1-1. One antenna collects base station forward link signals and radiates handset reverse link signals. The antenna connects with receive and transmit paths through a SKY77521 (FEM, Front End Module + GSM PAM). The UMTS receive paths each include an LNA, an RF band-pass filter, and a downconverter that translate the signal directly from RF-to-baseband using radioOne ZIF techniques. The RFIC's RX analog baseband outputs, for the receive chains, connect to the MSM IC. The UMTS and GSM RX baseband outputs share the same inputs to the MSM IC.

For the transmit chains, the RTR6285 IC directly translates the TX baseband signals (from the MSM device) to an RF signal using an internal LO generated by integrated on-chip PLL and VCO. The RTR6285 IC outputs deliver fairly high-level RF signals that are first filtered by TX SAWs and then amplified by their respective UMTS PAs.

<sup>1</sup> QUALCOMM's branded chipset that implements a Zero-IF radio architecture.

### 3. TECHNICAL BRIEF

In the GSM receive path, the received RF signals are applied through their band-pass filters and down-converted directly to baseband in the RTR6285 transceiver IC. These baseband outputs are shared with the UMTS receiver and routed to the MSM IC for further signal processing.

The GSM/EDGE transmit path employs one stage of up-conversion and, in order to improve efficiency, is divided into phase and amplitude components to produce an open-loop Polar topology:

1. The on-chip quadrature up-converter translates the GMSK-modulated signal or 8-PSK modulated signal, to a constant envelope phase signal at RF;
2. The amplitude-modulated (AM) component is applied to the ramping control pin of Polar power amplifier from a DAC within the MSM

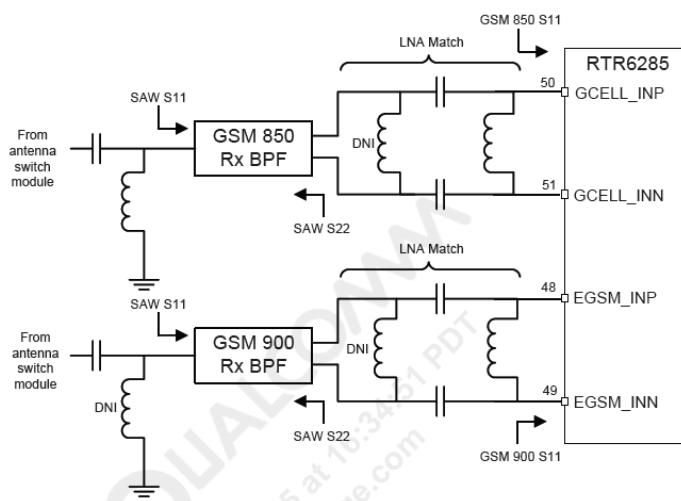
GM730/GM735 power supply voltages are managed and regulated by the PM7540 Power Management IC. This versatile device integrates all wireless handset power management, general housekeeping, and user interface support functions into a single mixed signal IC. It monitors and controls the external power source and coordinates battery recharging while maintaining the handset supply voltages using low dropout, programmable regulators.

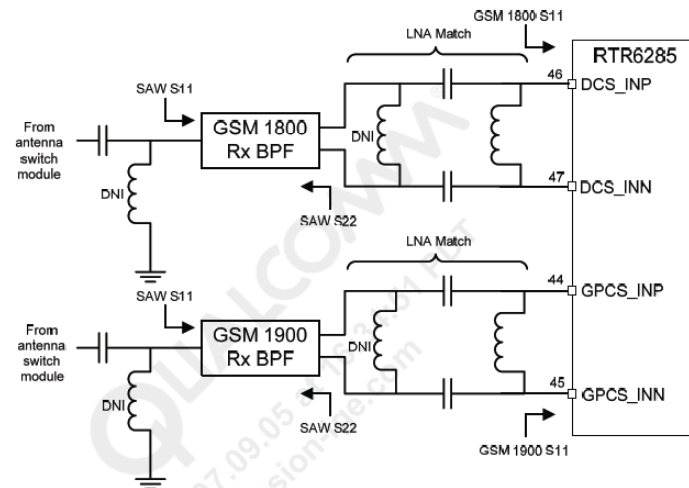
The device's general housekeeping functions include an ADC and analog multiplexer circuit for monitoring on-chip voltage sources, charging status, and current flow, as well as user-defined off-chip variables such as temperature, RF output power, and battery ID. Various oscillator, clock, and counter circuits support IC and higher-level handset functions. Key parameters such as under-voltage lockout and crystal oscillator signal presence are monitored to protect against detrimental conditions.

### 3.2. GSM MODE

### 3.2.1 GSM RECEIVER

The GSM-850, GSM-900, GSM-1800, and GSM-1900 receiver inputs of RTR6285 are connected to the transceiver front-end circuits (switch module) through saw filters. GSM-850, GSM-900, GSM-1800, and GSM-1900 receiver inputs use differential configurations to improve common-mode rejection and second-order non-linearity performance as shown in Figure 1-2. The balance between the complementary signals is critical and must be maintained from the RF filter outputs all the way into the IC pins



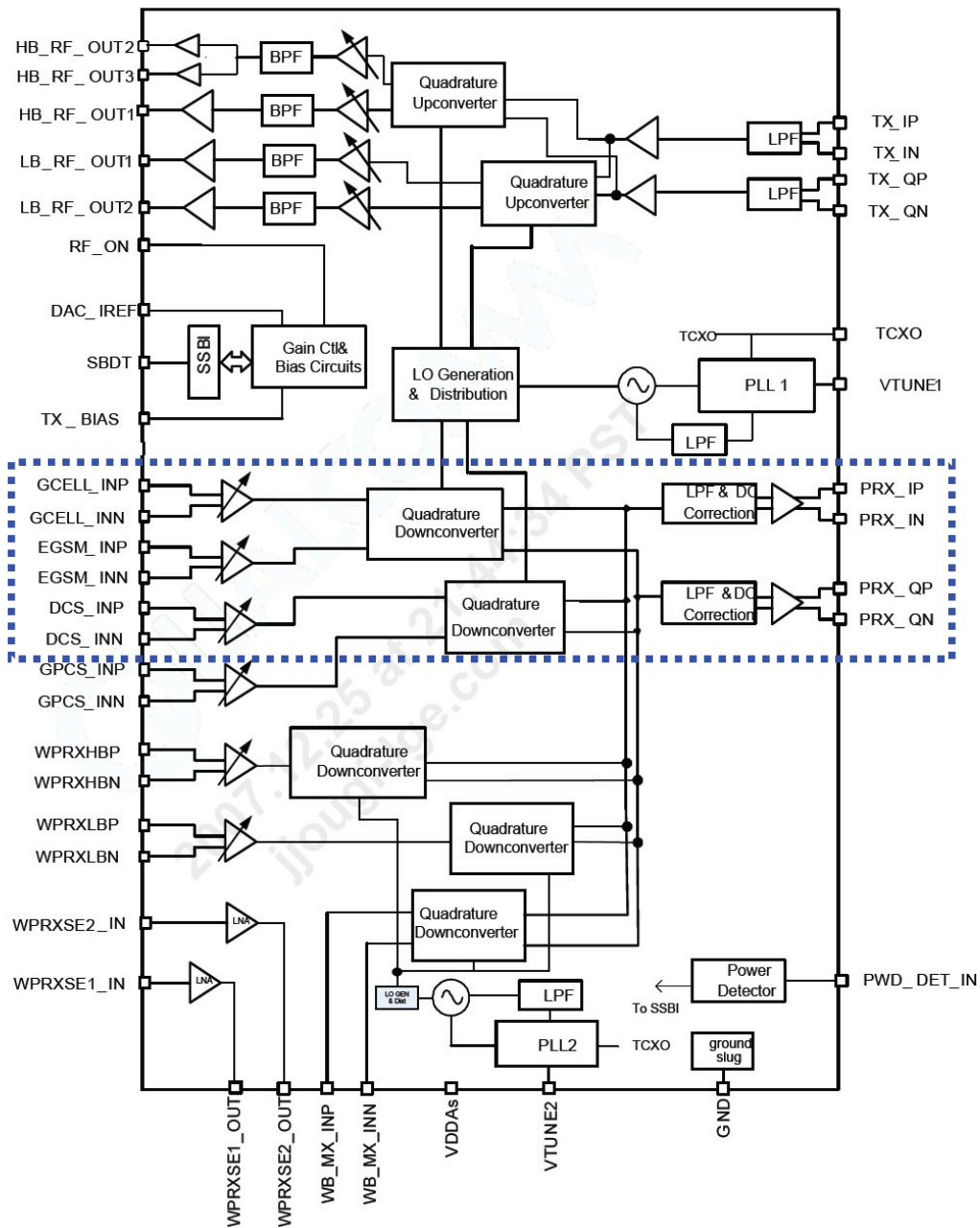


[Figure 1-2] GSM Receiver Inputs Topologies

Since GSM-850, GSM-900, GSM-1800, and GSM-1900 signals are time-division duplex (the handset can only receive or transmit at one time), switches are used to separate RX and TX signals in place of frequency duplexers – this is accomplished in the switch module. The GSM-850, GSM-900, GSM-1800, and GSM-1900 receive signals are routed to the RTR6285 through saw filters and matching networks that transform single-ended 50-Ω sources to differential impedances optimized for gain and noise figure. The RTR input uses a differential configuration to improve second-order inter-modulation and common mode rejection performance. The RTR6285 input stages include MSM-controlled gain adjustments that maximize receiver dynamic range.

The amplifier outputs drive the RF ports of the quadrature RF-to-baseband downconverters. The downconverted baseband outputs are multiplexed and routed to lowpass filters (one I and one Q) having passband and stopband characteristics suitable for GMSK or 8-PSK processing. These filter circuits include DC offset corrections. The filter outputs are buffered and passed on to the MSM7200A IC for further processing as shown in Figure 1-3.

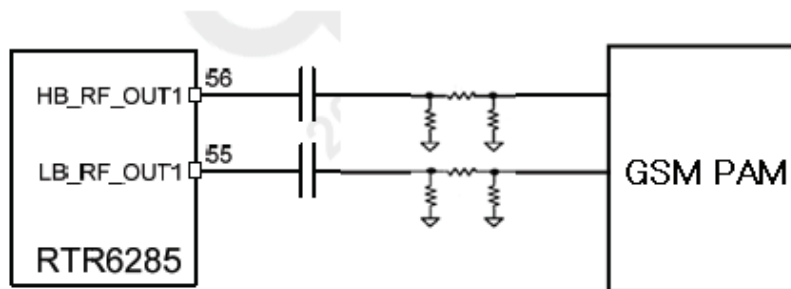
### 3. TECHNICAL BRIEF



[Figure 1-3] RTR6285 RX feature

### 3.2.2 GSM TRANSMITTER

The RTR6285 transmitter outputs(HB\_RF\_OUT1 and LB\_RF\_OUT1) include on-chip output matching inductors. 50ohm output impedance is achieved by adding a series capacitor at the output pins. The capacitor value may be optimized for specific applications and PCB characteristics based on pass-band symmetry about the band center frequency as shown in Figure 1-3.



[Figure 1-4] GSM Transmitter Outputs Topologies

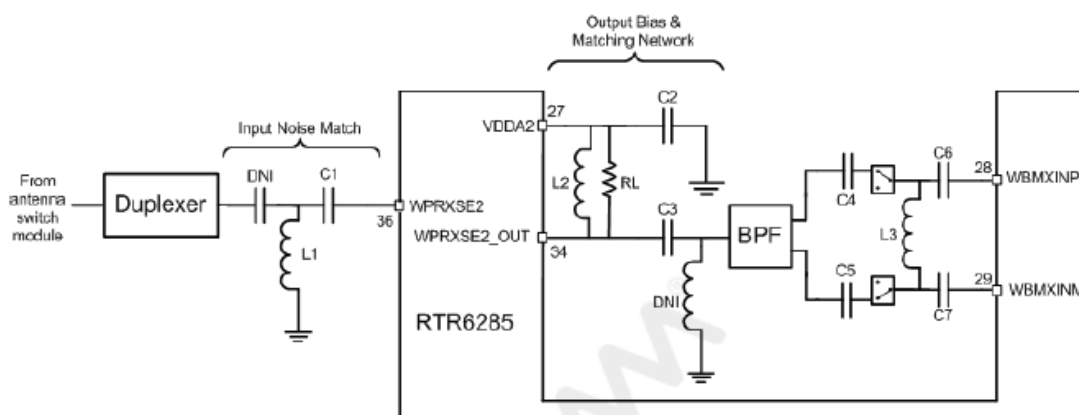
The RTR6285 IC is able to support GSM850/GSM 900 and GSM 1800/1900 mode transmitting. This design guideline shows a quad-band GSM application. Both high-band and low band outputs are followed by resistive pads to ensure that the load presented to the outputs remains close to 50ohm.

### 3. TECHNICAL BRIEF

## 3.3. UMTS MODE

### 3.3.1 UMTS RECEIVER

The UMTS duplexer receiver output is routed to LNA circuits within the RTR6285 device as shown in Figure 1-5. The UMTS RX input is provided with an on-chip LNA that amplifies the signal before a second stage filter that provides differential downconverter as shown in Figure 1-5. This second stage input is configured differentially to optimize second-order intermodulation and common mode rejection performance. The gain of the UMTS front end amplifier and the UMTS second stage differential amplifier are adjustable, under MSM control, to extend the dynamic range of the receivers. The second stage UMTS RX amplifiers drive the RF ports of the quadrature RF-to-baseband downconverters. The downconverted UMTS RX baseband outputs are routed to lowpass filters having passband and stopband characteristics suitable for UMTS RX processing. These filter circuits allow DC offset corrections, and their differential outputs are buffered to interface shared with GSM RX to the MSM IC. The UMTS baseband outputs are turned off when the RTR6285 is downconverting GSM signals and on when the UMTS is operating.



[Figure 1-5] UMTS Receiver Inputs Topologies

### 3.3.2 UMTS TRANSMITTER

The UMTS TX path begins with differential baseband signals (I and Q) from the MSM device.

These analog input signals are amplified, filtered, and applied to the quadrature up-converter mixers. The up-converter output is amplified by multiple variable gain stages that provide transmit AGC control. The AGC output is filtered and applied to the driver amplifier; this output stage includes an integrated matching inductor that simplifies the external matching network to a single series capacitor to achieve the desired 50- $\Omega$  interface.

The RTR6285 UMTS output is routed to its power amplifier through a bandpass filter, and delivers fairly high-level signals that are filtered and applied to the PA. Transmit power is delivered from the duplexer to the antenna through the switch module.

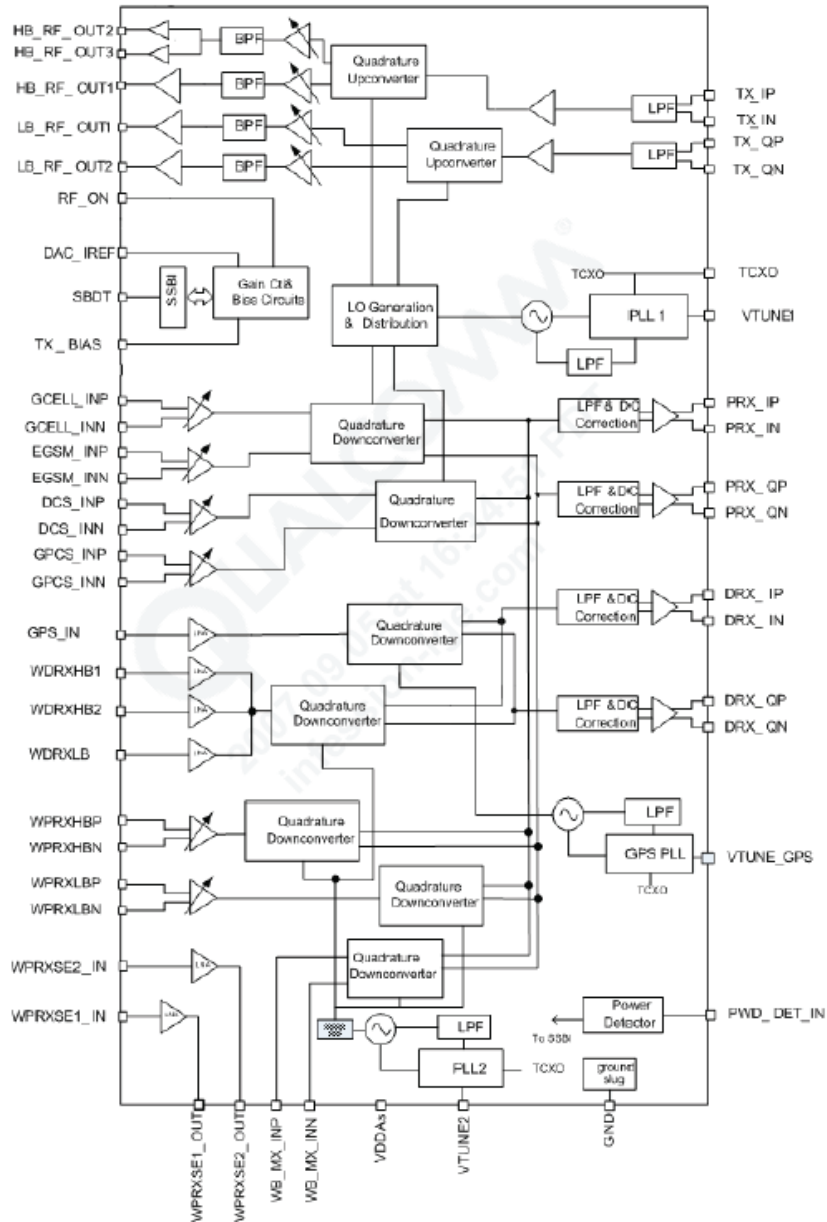
The transceiver LO synthesizer is contained within the RTR6285 IC with the exception of the off-chip loop filter components and the VC-TCXO. This provides a simplified design for multimode applications. The PLL circuits include a reference divider, phase detector, charge pump, feedback divider, and digital logic generator.

UMTS TX Using only PLL1, the LO generation and distribution circuits create the necessary LO signals for nine different frequency converters. The UMTS transmitter also employs the ZIF architecture to translate the signal directly from baseband to RF. This requires FLO to equal FRF, and the RTR6285 IC design achieves this without allowing FVCO to equal FRF.

The RTR6285 IC is able to support UMTS 2100/1900/1800/1700/900 and 850 mode transmitting. This design guideline shows UMTS 2100, UMTS1900 and UMTS850 applications.



### 3. TECHNICAL BRIEF

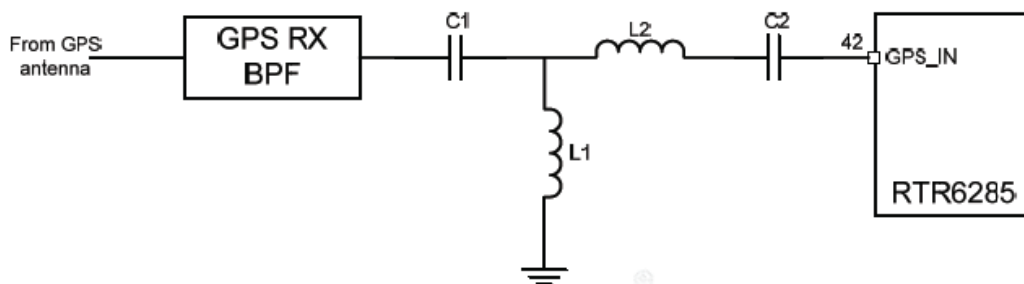


[Figure 1.6] RTR6285 IC Functional Block Diagram

### 3.4. GPS MODE

#### 3.4.1 GPS RECEIVER

The GPS receiver input employs a single-ended connection realized by this pin. The GPS input is routed from the GPS antenna switch, through a band-pass filter and then an impedance transformer circuit that optimally matches the impedance looking into the GPS LNA. The impedance transformer circuit topology is shown in Figure 1-7.



[Figure 1.7] GPS Input Network Topology

### 3.5. LO GENERATION and DISTRIBUTION CIRCUIT

The integrated LO generation and distribution circuits are driven by internal VCOs to support various modes to yield highly flexible quadrature LO outputs that drive all GSM/EDGE, UMTS band and GPS upconverters and downconverters; with the help of these LO generation and distribution circuits, true zero-IF architecture is employed in all GSM and UMTS band receivers and transmitters to translate the signal directly from RF-to-baseband and from baseband-to-RF. Two fully functional fraction-N synthesizers, including VCOs and loop filters, are integrated within the RTR6285 IC. In addition, the RTR6285 has a third synthesizer used for GPS operation. The first synthesizer (PLL1) in the RTR6285 creates the transceiver Los that support the UMTS transmitter, and all four GSM band receivers and transmitters including: GSM850, GSM900, GSM1800, and GSM1900. The second synthesizer (PLL2) in the RTR6285 IC provides the LO for the UMTS primary receiver. For the RTR6285 IC only, the second synthesizer also provides the LO for the secondary UMTS receiver. The third synthesizer (PLL3), only in the RTR6285 IC, provides the LO for the GPS receiver. An external TCXO input signal is required to provide the synthesizer frequency reference to which the PLL is phase and frequency locked. The RTR6285 ICs integrate most of the PLL loop filter components on-chip except for three off-chip loop filter-series capacitors, which significantly reduces off-chip component requirement. With the integrated fractional-N PLL synthesizers, the RTR6285 ICs have the advantage of more flexible loop bandwidth control, fast lock time, and low-integrated phase error.

## 3. TECHNICAL BRIEF

### 3.6. OFF-CHIP RF COMPONENTS

#### 3.6.1 ALM-1412(U108:GPS LNA)

The ALM-1412 is an LNA module, with integrated filter, designed for GPS band applications at 1.575GHz. The LNA uses AVAGO Technologies' proprietary GaAs Enhancement-mode pHEMT process to achieve high gain with very low noise figure and high linearity. Noise figure distribution is very tightly controlled. A CMOS-compatible shutdown pin is included either for turning the LNA on/off, or for current adjustment. The integrated filter utilizes an Avago Technologies' leading edge FBAR filter for exceptional rejection at Cell/PCS Band frequencies. The ALM-1412 is useable down to 1V operation. It achieves low noise figure, high gain and linearity even at 1V, making it suitable for use in critical low-power GPS applications or during low-battery situations.

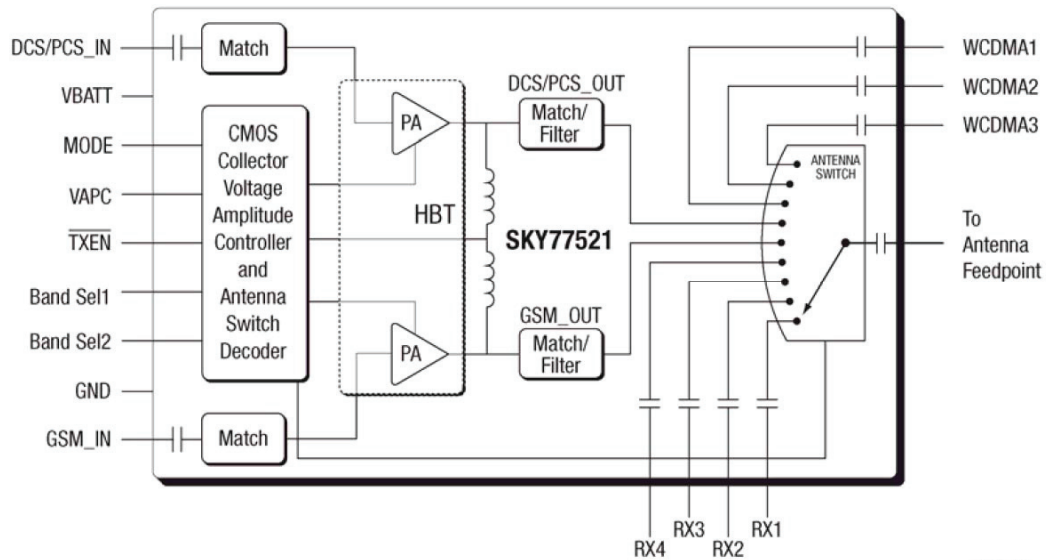
#### 3.6.2 SKY77521(U101:FEM + GSM Quad-Band PAM)

SKY77521 is transmit and receive Front End Module(FEM) designed in a very low profile (1mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation – a complete transmit VCO-to-Antenna and Antenna-to-receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation and EDGE Polar Modulation. WCDMA switch-through support is provided by three dedicated high-linearity ports.

#### ANTENNA SWITCH MODULE LOGIC(SKY77521)

BAND	ANT_SEL0	ANT_SEL1	ANT_SEL2	ANT_SEL3
GSM850/EGSM TX	LOW	HIGH	LOW	LOW
PCN/PCS TX	HIGH	HIGH	LOW	LOW
WB 850/900	LOW	LOW	HIGH	LOW
WB 1900	HIGH	LOW	HIGH	LOW
WB 2100	HIGH	LOW	LOW	LOW
GSM850 RX	HIGH	LOW	LOW(X)	HIGH
EGSM RX	HIGH	HIGH	LOW(X)	HIGH
DCN RX	LOW	HIGH	LOW(X)	HIGH
PCS RX	LOW	LOW	LOW(X)	HIGH

[Table 1] Antenna Switch Module Logic



[Figure 1.8] SKY77521 Functional Block Diagram.

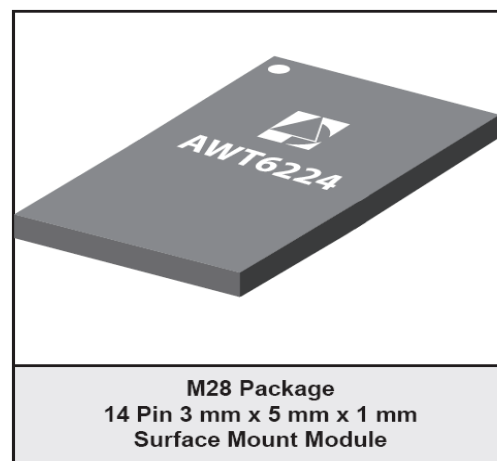
### 3.6.3 W-CDMA Dual-Band POWER AMPLIFIER (U104: AWT6224R)

#### FEATURES

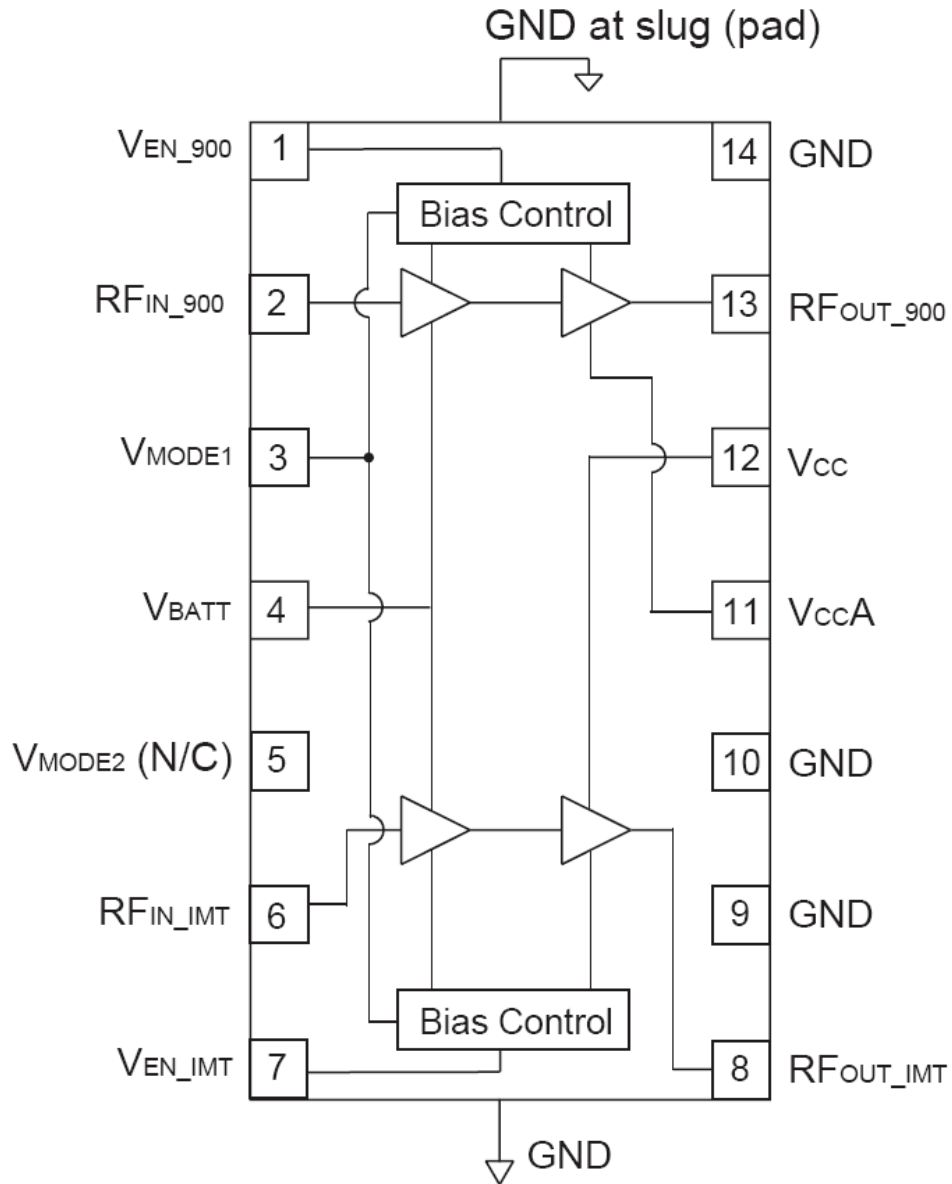
- InGaP HBT Technology
- High Efficiency:  
20 % @ +16 dBm P<sub>OUT</sub>  
(without DC/DC Converter)  
40 % @ maximum P<sub>OUT</sub>
- Low Quiescent Current: 8 mA
- Internal Voltage Regulation
- Common V<sub>MODE</sub> Control Line
- Simplified V<sub>CC</sub> Bus PCB routing
- Reduced External Component Count
- Low Profile Surface Mount Package: 1 mm
- HSDPA Compliant
- RoHS Compliant Package, 250 °C MSL-3

#### APPLICATIONS

- Dual-band UMTS Band 1 and 8 Wireless Handsets and Datacards



### 3. TECHNICAL BRIEF



[Figure 1.9] AWT6224R Functional Block Diagram.

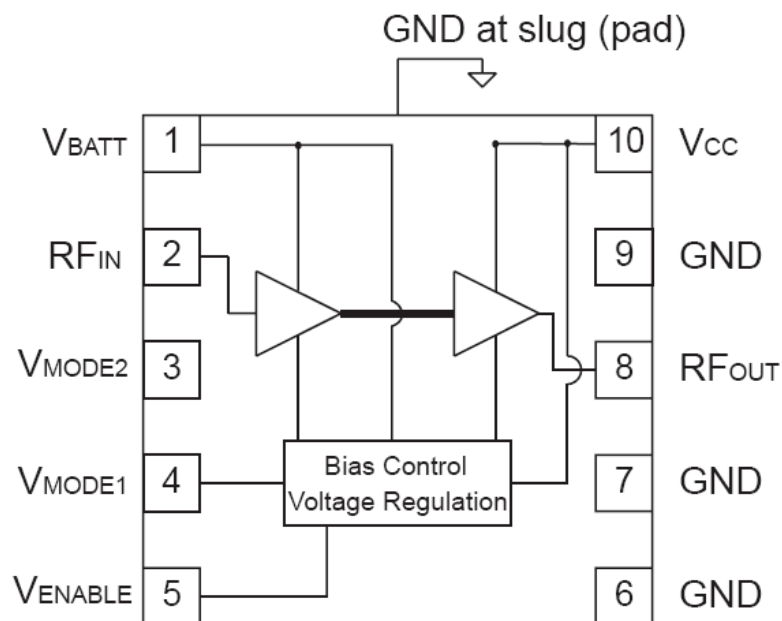
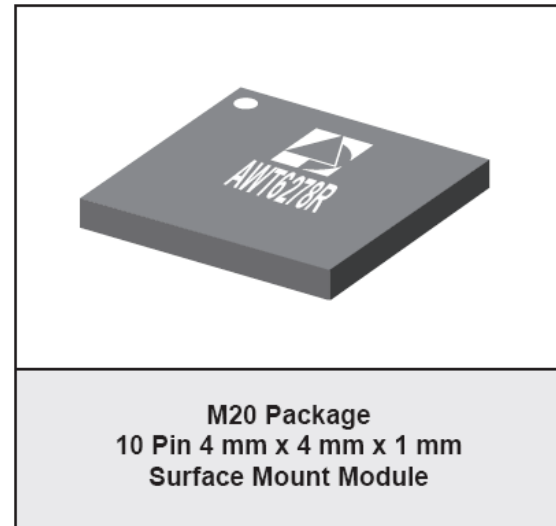
### 3.6.4 W-CDMA 1900 POWER AMPLIFIER (U107: AWT6278R)

#### FEATURES

- InGaP HBT Technology
- High Efficiency:
  - 41 % @  $P_{OUT} = +29.5$  dBm
  - 21 % @  $P_{OUT} = +16$  dBm
  - 9 % @  $P_{OUT} = +8$  dBm
- Low Quiescent Current: 8 mA
- Low Leakage Current in Shutdown Mode:  $<1 \mu A$
- Internal Voltage Regulator Eliminates the Need for External Reference Voltage
- Optimized for a  $50 \Omega$  System
- Low Profile Miniature Surface Mount Package
- RoHS Compliant Package,  $250^\circ C$  MSL-3
- HSPA Compliant (no backoff)

#### APPLICATIONS

- WCDMA/HSPA PCS-Band Wireless Handsets and Data Devices



[Figure 1.10] AWT6278R Functional Block Diagram.

### 3. TECHNICAL BRIEF

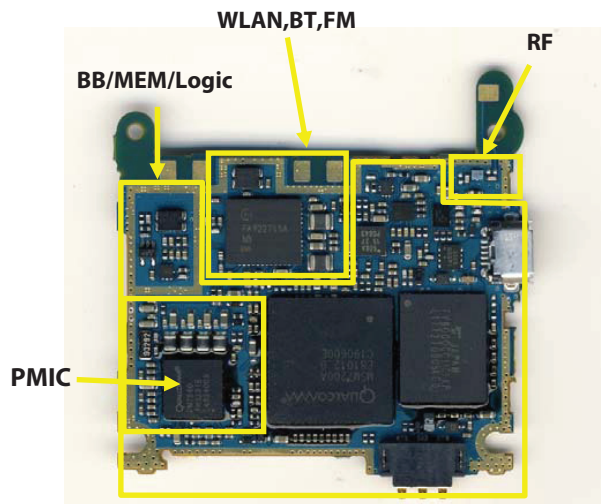
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## 3.7 Main Features

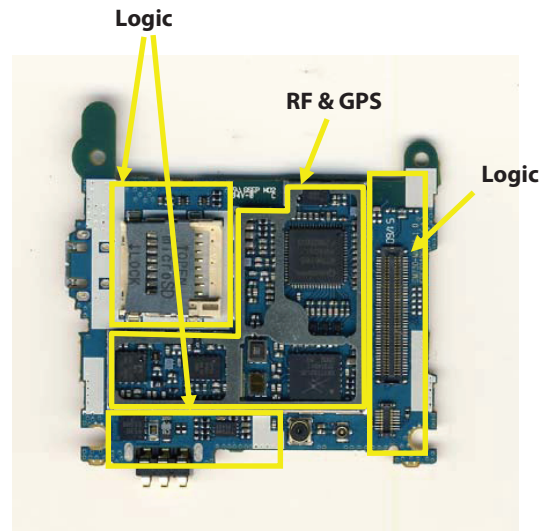
### 1. LG GM730/GM735 Main Features

- Bar Type Simple & Stylish design
- UMTS 2100 + UMTS1900 + UMTS900+  
GSM 900 + DCS 1800 + PCS 1900 + GSM850 based GSM/GPRS/EDGE/UMTS
- HSDPA 3.6Mbps
- 3.0" WQVGA LCD (262K TFT)
- Touch Sensitive User Interface
- 5M AF Camera
- Stereo Headset & Speaker phone
- 72 Poly Sound
- MP3/AAC/AMR/MIDI/3GP/SMAF decoder and play
- MPEG4 encoder/decoder and play/save
- JPEG en/decoder
- Supports Bluetooth and HS-USB
- Supports WLAN
- Internal User Memory over 128MB
- 1000 mAh (Li-Ion Polymer)
- Windows Mobile™ 6.1 Professional
- Microsoft Office Mobile

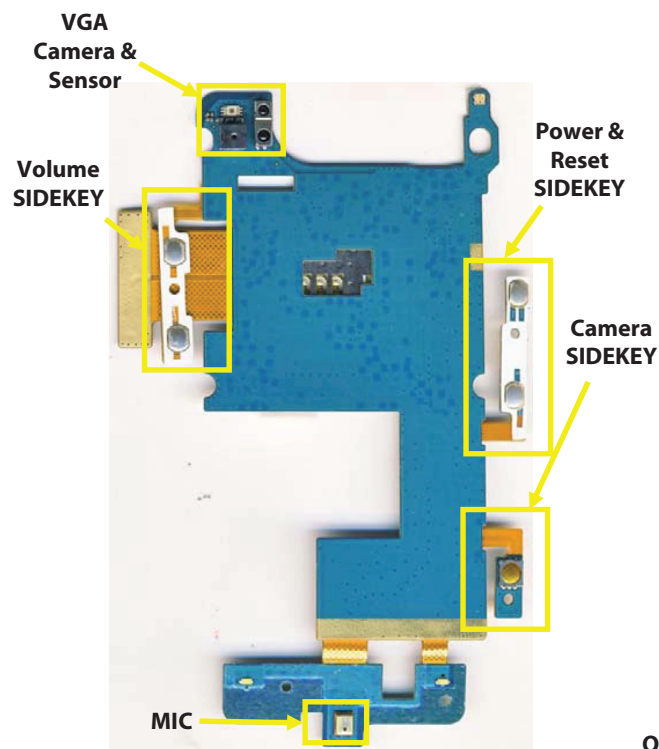
#### 2. GM730/GM735 Main Component



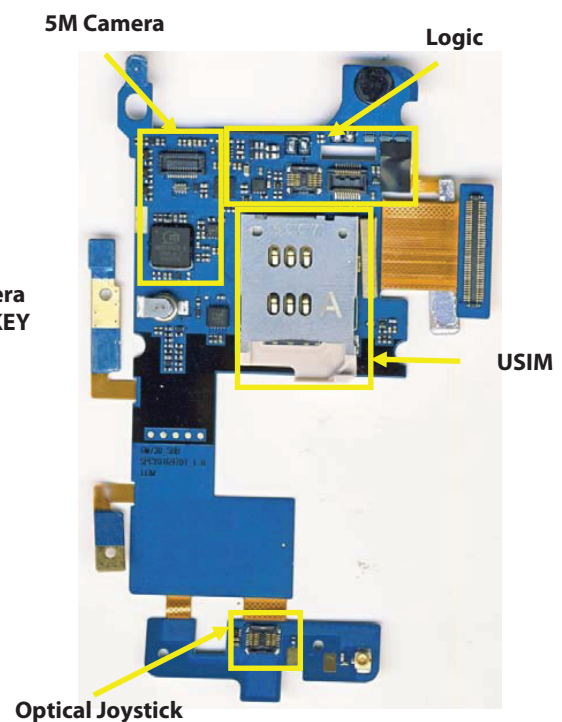
Main board, Top



Main board, Bottom



Sub board, Top

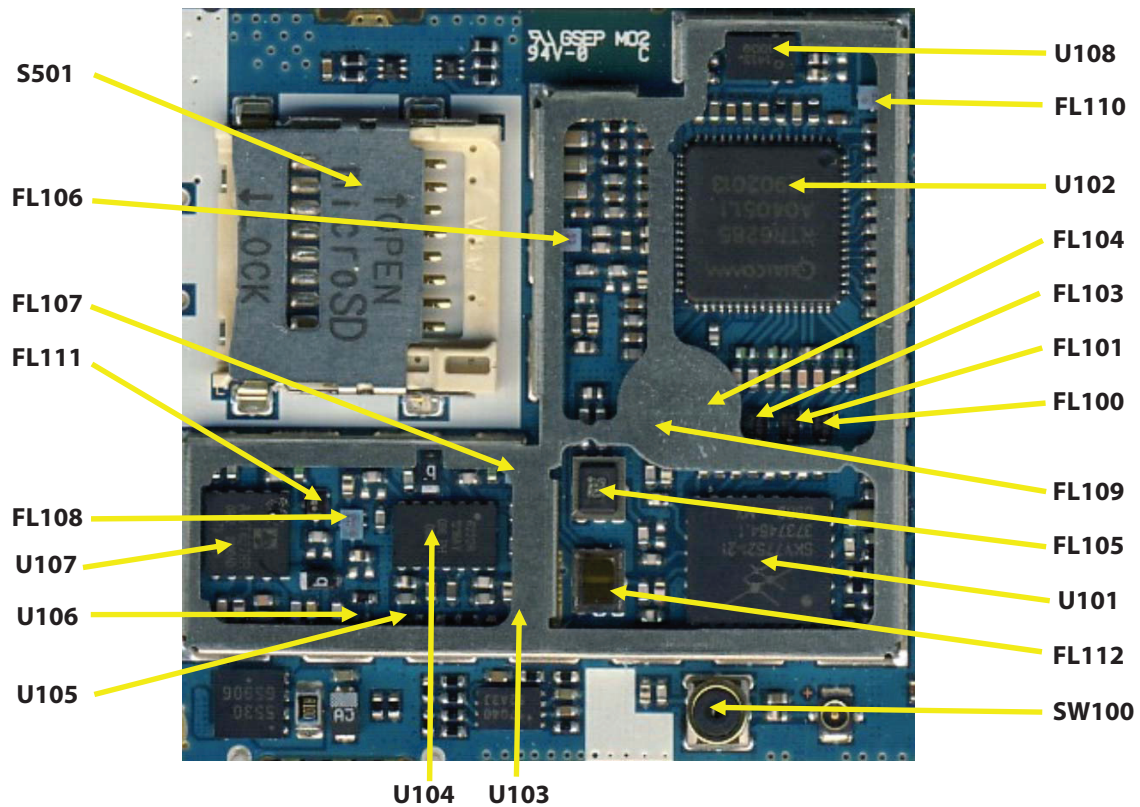


Sub board, Bottom



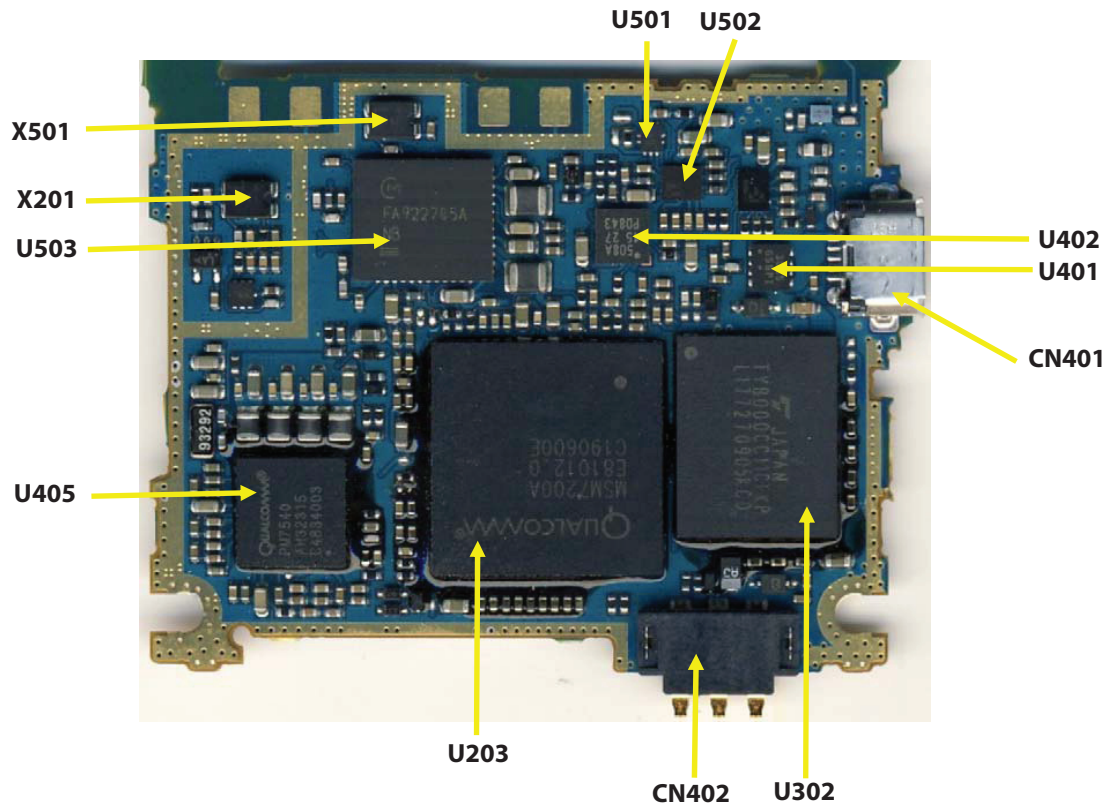
### 3. TECHNICAL BRIEF

#### RF



Reference	Description	Reference	Description
U102	RTR6285(Transceiver)	FL107	WCDMA (VIII) TX SAW
U101	FEM & GSM PAM	FL105	WCDMA (VIII) Duplexer
U104	WCDMA Dual (I,VIII) PAM	FL112	WCDMA (II) Duplexer
U107	WCDMA (II) PAM	FL109	WCDMA (I) Duplexer
FL111	WCDMA (II) TX SAW Filter	FL106	WCDMA (I) RX SAW Filter
FL108	WCDMA (I) TX SAW Filter	U108	GPS LNA
U106	WCDMA (II) Coupler	FL110	GPS SAW Filter
FL101	EGSM Rx SAW Filter	FL100	GSM850 Rx SAW Filter
U105	WCDMA (I) Coupler	FL104	PCS Rx SAW Filter
U103	WCDMA (VIII) Coupler	FL103	DCS Rx SAW Filter
SW101	Test Connector	S501	Micro-SD Socket

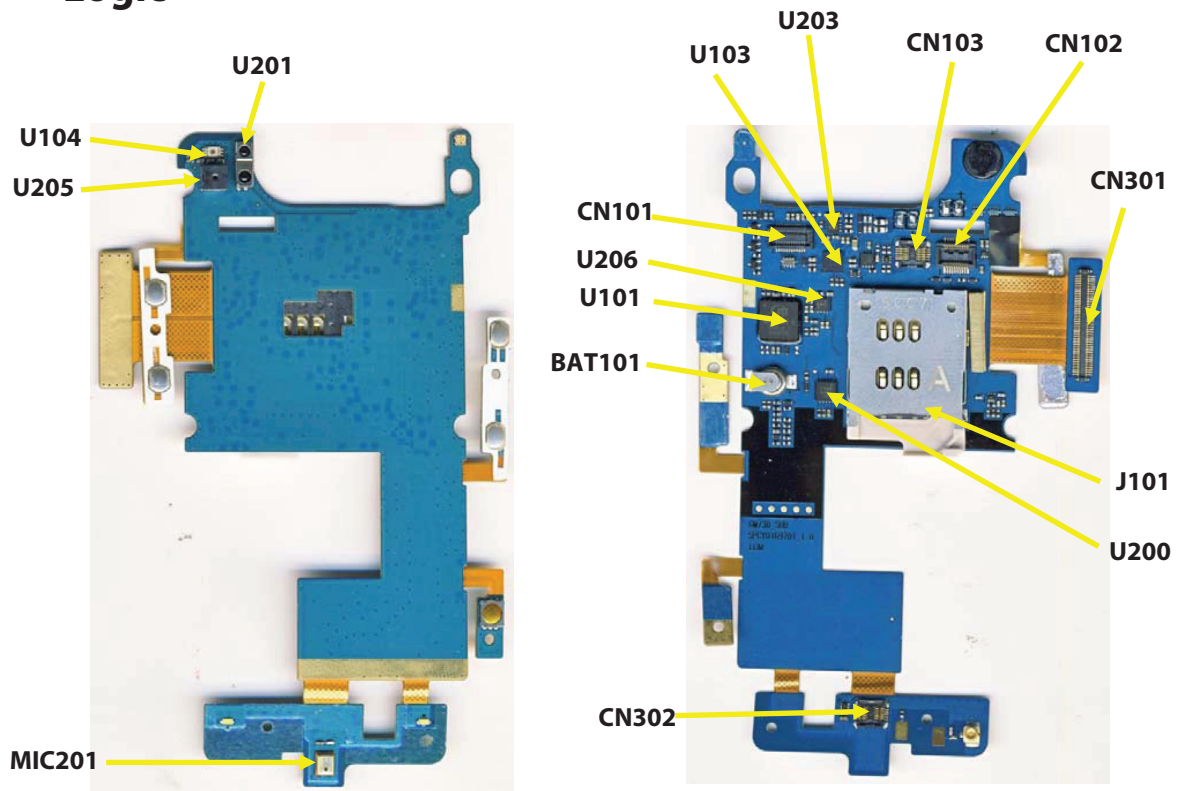
#### Logic / BB / MEM / Audio/WLAN



Ref.	Description	Ref.	Description
X201	TCXO (9.2MHz)	CN402	Battery Connector
X501	TCXO (26MHz)	U501	Audio Subsystem
U503	Wi-Fi & BT & FM Module	U502	Audio Subsystem
U405	PMIC, PM7540	U402	USB Transceiver
U203	MCU, MSM7200A	U401	Over-voltage Protection
U302	Memory, MCP	CN401	Micro USB 5Pin Con.

### 3. TECHNICAL BRIEF

#### Logic



Ref.	Description	Ref.	Description
U201	Proximity sensor	U103	LCD Backlight Charge Pump
U104	Luminance Sensor	U203	Proximity sensor Control IC
U205	VGA Camera	CN103	Touch Screen Connector
MIC201	Mic	CN102	LCD 20PIN Connector
CN101	24pin Camera Con.	CN301	Main Sub B TO B CON
U206	5M CAM LDO	J101	SIM Connector
U101	5M Camera ISP	U200	Motion Sensor
BAT101	RTC Backup Battery	CN302	Optical Joystick Con.

## 3. BB Technical Description

### 3.8 Digital Baseband(DBB/MSM7200A)

#### 3.8.1 General Description

##### A. Features(MSM7200A)

- Support for multimode operation – WCDMA(UMTS),GSM/GPRS,EDGE, HSDPA
- The ARM1136-J microprocessor can operate at up to 528 MHz.
- The ARM926EJ-S microprocessor can operate up to 256 MHz.
- Internal 256M Bits stacked DDR memory.
- Java hardware acceleration for faster Java-based games and other applets.
- Supports low-power, low-frequency crystal to enable TCXO shutoff.
- Integrated USIM Controller for direct interface to USIM card
- Software-controlled power management feature
- Integrated Bluetooth 2.0 baseband processor for wireless connectivity to peripherals
- High-speed, serial mobile-display, digital interface that optimizes the interconnection cost between the MSM device and the LCD panel
- Receive chain diversity support for WCDMA, providing improved capacity and data throughput
- USB OTG core supports both slave and limited host functionality
- High-speed USB link
- Integrated wideband stereo CODEC for digital audio applications
- Direct interface to digital camera module with video front end (VFE) image processing
- Vocoder support (GSM-HR, FR, EFR, AMR, W-AMR, and 4GV)
- Advanced 15 × 15 × 1.4 mm, 0.5 mm pitch, 543-pin lead-free CSP packaging technology
- HSDPA Features
  - supports release 5, December 2004 standard for HSDPA
  - HSDPA enables PS data speeds up to 7.2 Mbps on the downlink
- WCDMA Features
  - supports release 99 June 2004 of the W-CDMA FDD standard
  - PS data rates supporting 384kbps DL / 384kbps UL
  - CS data rates supporting 64kbps DL / 64kbps UL
  - AMR (all rates)
- GSM Features
  - Voice features (FR,EFR,AMR,HR)
  - Circuit-switched data features(9.6K,14.4K,Fax)
- GPRS Features
  - Simple Class A operation
  - Multi-slot class 12 data services
  - CS schemes CS1,CS2,CS3,CS4
- EDGE Features
  - EDGE E2 power class for 8PSK
  - Simple Class A, multi-slot class 12
  - Downlink/Uplink coding schemes (CS1-4, MCS1-9)
    - Operation and Services
- LCD & Camera Interface
  - USIM Interface
  - Dual Memory Buses(EBI1-SDRAM & EBI2-NAND Flash)
- External Memory Interface (Micro SD)
  - Data Communication
    - Bluetooth
    - Slave USB

### 3. TECHNICAL BRIEF

#### 3.9 Hardware Architecture

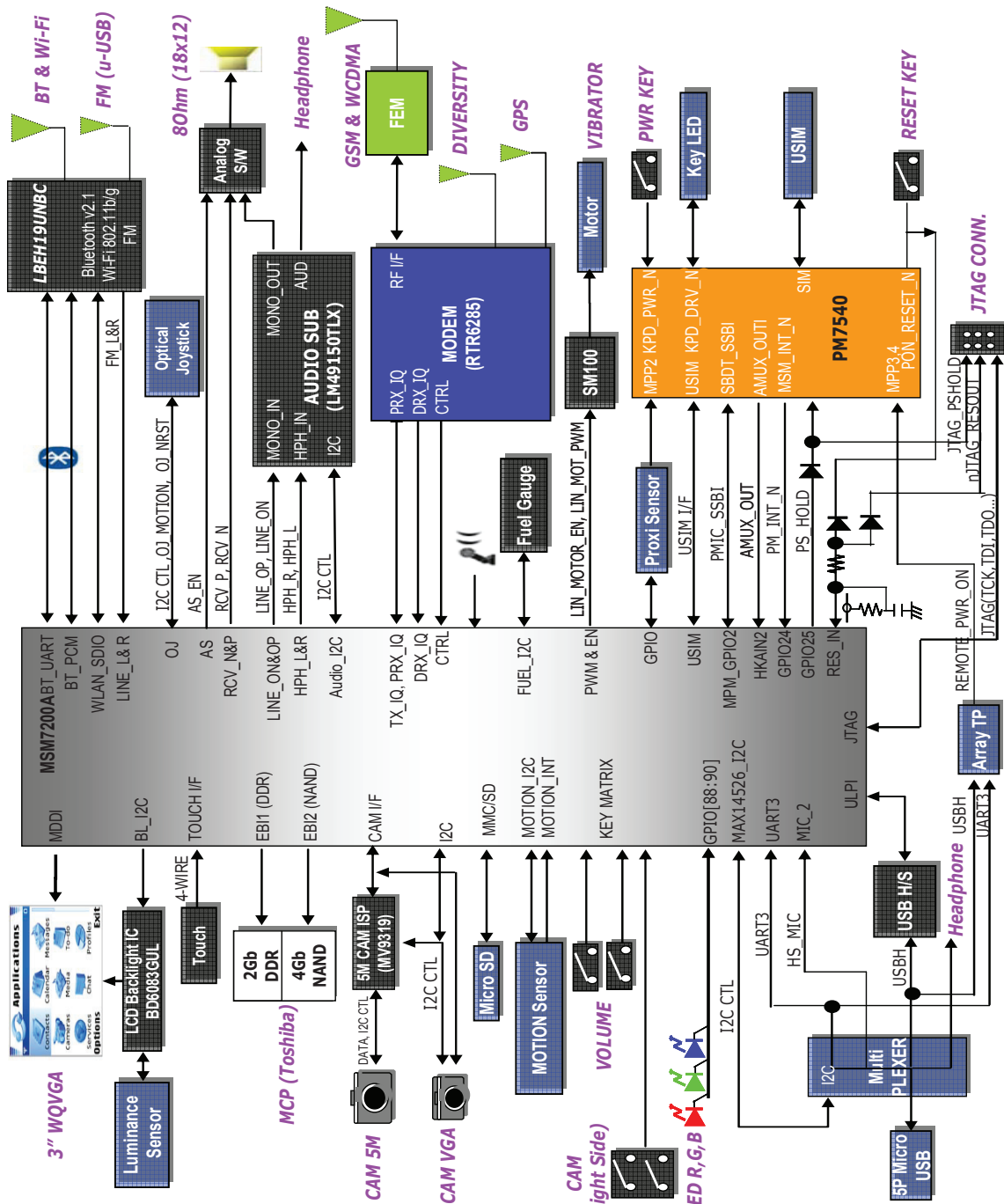


Figure. Simplified Block Diagram of System

## 3.9.1. Block Diagram(MSM7200A)

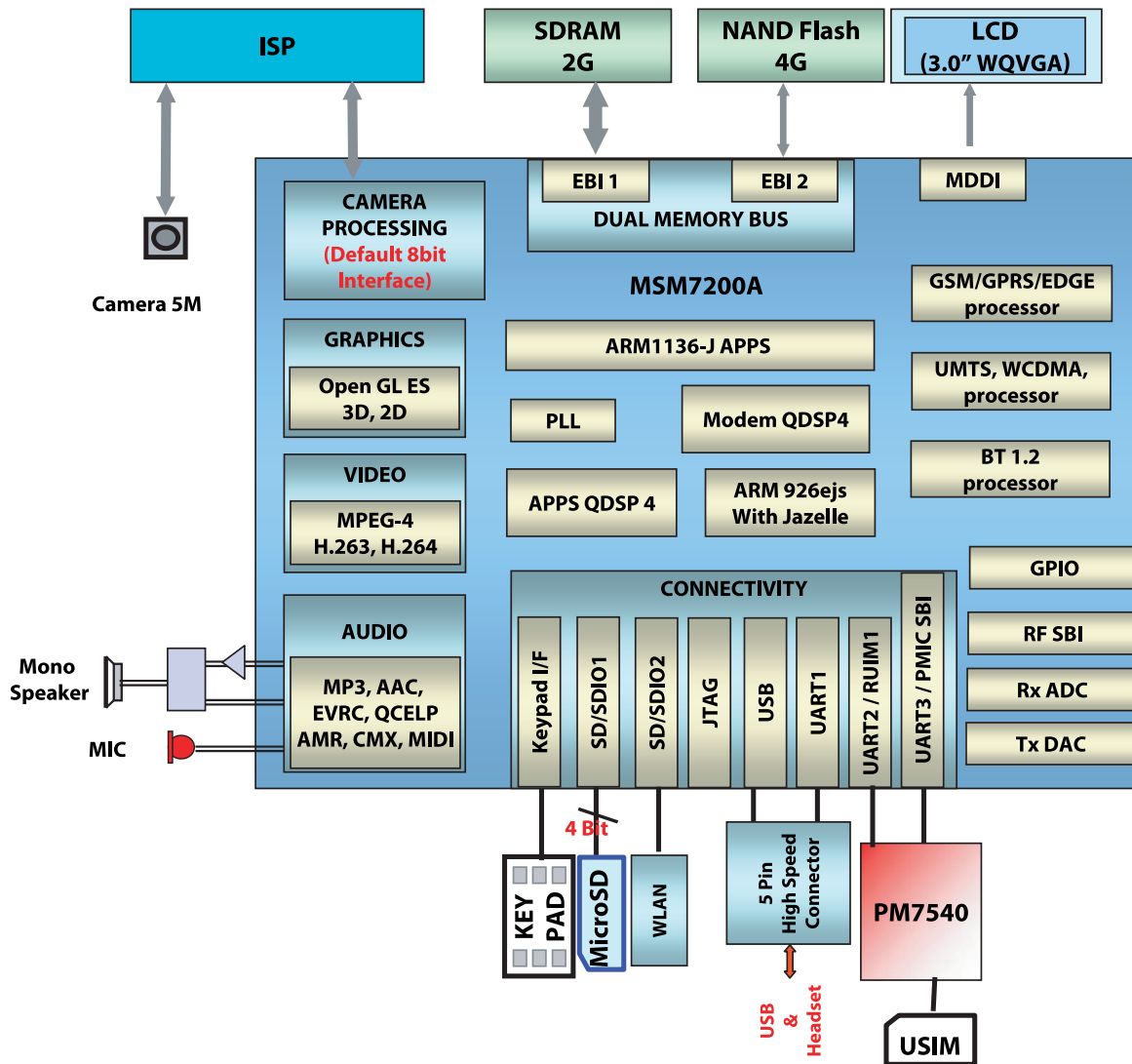


Figure. Simplified Block Diagram of MSM7200A



### 3.10. Subsystem(MSM7200A)

#### 3.10.1. ARM Microprocessor Subsystem

The MSM7200A device uses an embedded ARM1136-J, ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM, including control of the external peripherals such as the keypad, LCD, SDRAM, and NAND-Flash devices. Through a QUALCOMM proprietary serial bus interface (SBI) the ARM926EJ-S configures and controls the functionality of the RTR6285 and PM7540 devices.

#### 3.10.2. UMTS Subsystem

The UMTS Subsystem performs the digital UMTS signal processing. Its components include:

- Searcher engine
- Demodulating fingers
- Combining block
- Frame de-interleaver
- Viterbi decoder
- Up-link subsystem
- Turbo decoder

On the down-link channel the UMTS subsystem searches, demodulates, and decodes incoming CPICH, CCPCH, SCH, and Traffic Channel information. It extracts packet data from the downlink traffic channel and prepares the packet data for processing. For the up-link, the WCDMA subsystem processes the packet data and modulates the up-link traffic channel (DCH).

#### 3.10.3. GSM Subsystem

The GSM/GPRS/EGPRS subsystem reuses the MSM6280 GSM core. It performs the digital GSM signal processing and PA gain controls for GPRS support. The PA output level is controlled by an analog signal generated on the MSM. In GSM mode, the power profile ramps up before the burst and ramps down after the burst. In GPRS mode, at the beginning of each burst (up to four active transmit slots), PA must be smoothly ramped up to some desired output power level, held at that level for the current slot, smoothly ramped down/up during the transition period and held to the new level for the next slot until the last slot. Then it must be smoothly ramped down to near-zero level. The MSM6275 support differential GSM PA power control output.

The RF interface communicates with the mobile station external RF circuits. Signals to these circuits control signal gain in the Rx and Tx signal path, control DC offset errors, and maintain the system frequency reference.

#### 3.10.4. RF Interface

The RF interface communicates with the mobile station's external RF and analog baseband circuits. Signals to these circuits control signal gain in the Rx and Tx signal path and maintain The system's frequency reference.

### 3.10.5. Serial Bus Interface(SBI)

The MSM7200A device's SBI is designed specifically to be a quick, low pin count control protocol for QUALCOMM's RTR6285 and PM7540 ASICs. Using the SBI, the RTR6285 and PM7540 devices can be configured for different operating modes and for minimum power consumption, extending battery life in Standby mode. The SBI also controls DC baseband offset errors.

### 3.10.6. Wideband CODEC

The MSM7200A device integrates a wideband voice/audio CODEC into the mobile station modem (MSM). The CODEC supports two differential microphone inputs, one differential earphone output, one single-ended earphone output, and a differential analog auxiliary interface. The CODEC integrates the microphone and earphone amplifiers into the MSM6280 device, reducing the external component count to just a few passive components. The microphone (Tx) audio path consists of a two-stage amplifier with the gain of the second stage set externally. The Rx/Tx paths are designed to meet the ITU-G.712 requirements for digital transmission systems.

### 3.10.7. Vocoder Subsystem

The MSM7200A device's QDSP4000 supports AMR,FR,EFR and HR. In addition, the QDSP4000 has modules to support the following audio functions: DTMF tone generation, DTMF tone detection, Tx/Rx volume controls, Tx/Rx automatic gain control (AGC), Rx Automatic Volume Control (AVC), EarSeal Echo Canceller (ESEC), Acoustic Echo Canceller (AEC), Noise Suppression (NS), and programmable, 13-tap, Type-I, FIR, Tx/Rx compensation filters. The MSM7200A device's integrated ARM9TDMI processor downloads the firmware into the QDSP4000 and configures QDSP4000 to support the desired functionality.

### 3.10.8. ARM Microprocessor subsystem

The MSM7200A device uses an embedded ARM1136-J, ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM device, including control of the external peripherals such as the keypad, LCD, RAM, ROM, and EEPROM devices. Through a generic serial bus interface (SBI) the ARM926EJ-S configures and controls the functionality of the RTR6285 and PM7540 devices.

### 3.10.9. Mode Select and JTAG Interfaces

The mode pins to the MSM7200A device determine the overall operating mode of the ASIC. The options under the control of the mode inputs are Native mode, which is the normal subscriber unit operation, ETM mode, which enables the built-in trace mode, and test mode for factory testing. The MSM7200 device meets the intent of the ANSI/IEEE 1149.1A-1993 feature list. The JTAG interface can be used to test digital interconnects between devices within the mobile station during manufacture.



## 3. TECHNICAL BRIEF

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### 3.10.10. General-Purpose Input/Output Interface

The MSM7200A device has general-purpose bidirectional input/output pins. Some of the GPIO pins have alternate functions supported on them. The alternate functions include USB interface, additional RAM, ROM, general-purpose chip selects, parallel LCD interface, and a UART interface. The function of these pins is documented in the various software releases.

### 3.10.11. UART

The MSM7200A device employs three UARTs. UART1 has dedicated pins while UART2 and UART3 share multiplexed pins.

- UART1 for Bluetooth
- UART2 for USIM interface
- UART3 for data

### 3.10.12. USB

The MSM7200A device integrates a universal serial bus (USB) controller that supports both unidirectional and bidirectional transceiver interfaces. The USB controller acts as a USB peripheral communicating with the USB host.

### 3.11. Power Block

#### 3.11.1. General

MSM7200A, included RF, is fully covered by PM7540(Qualcomm PMIC). PM7540 cover the power of MSM7200A, MSM memory, RF block, Bluetooth, USIM and TCXO.

Major power components are :

**PM7540**(U405) : Phone power supply

**BD6083GUL**(Sub-pcb:U103) : LCD Backlight charge pump

#### 3.11.2 PM7540

The PM7540 device (Figure) integrates all wireless handset power management. The power management portion accepts power from all the most common sources – battery, external charger, adapter, coin cell back-up – and generates all the regulated voltages needed to power the appropriate handset electronics. It monitors and controls the power sources, detecting which sources are applied, verifying that they are within acceptable operational limits, and coordinates battery and coin cell recharging while maintaining the handset electronics supply voltages. Eight programmable output voltages are generated using low dropout voltage regulators, all derived from a common trimmed voltage reference. A dedicated controller manages the TCXO warm-up and signal buffering, and key parameters (under-voltage lockout and crystal oscillator signal presence) are monitored to protect against detrimental conditions.

MSM device controls and statuses the PM7540 IC using Single Serial Bus Interface (SSBI) supplemented by an Interrupt Manager for time-critical information. Another dedicated IC Interface circuit monitors multiple trigger events and controls the power-on sequence.

### 3. TECHNICAL BRIEF

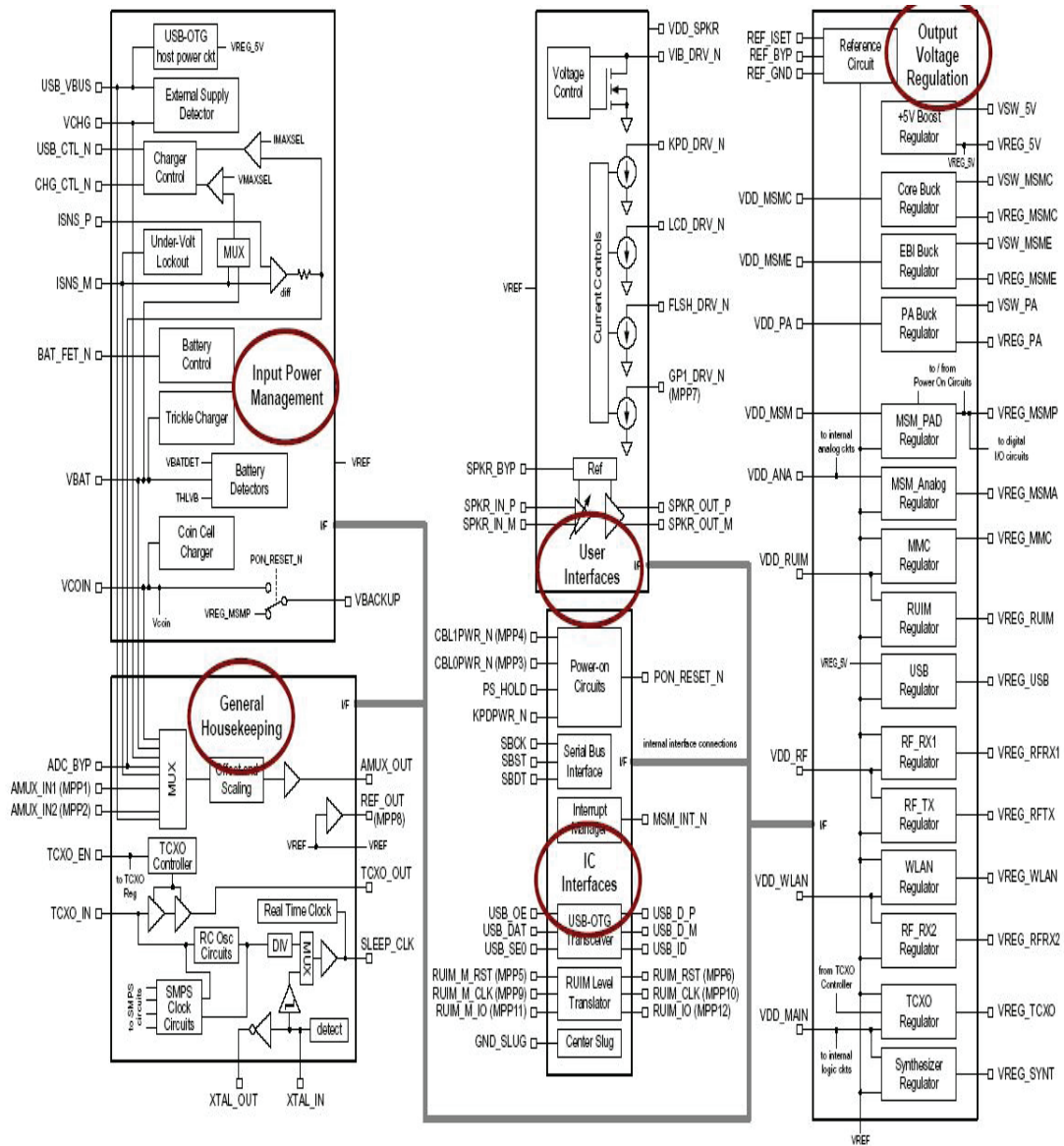
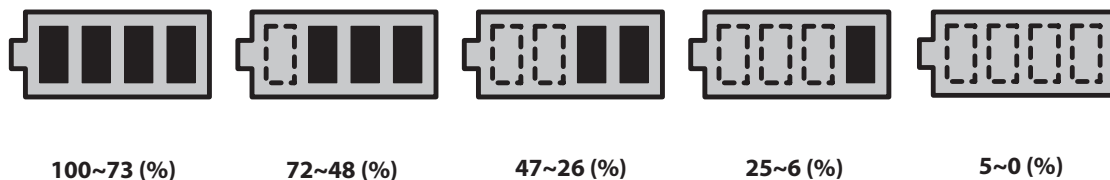
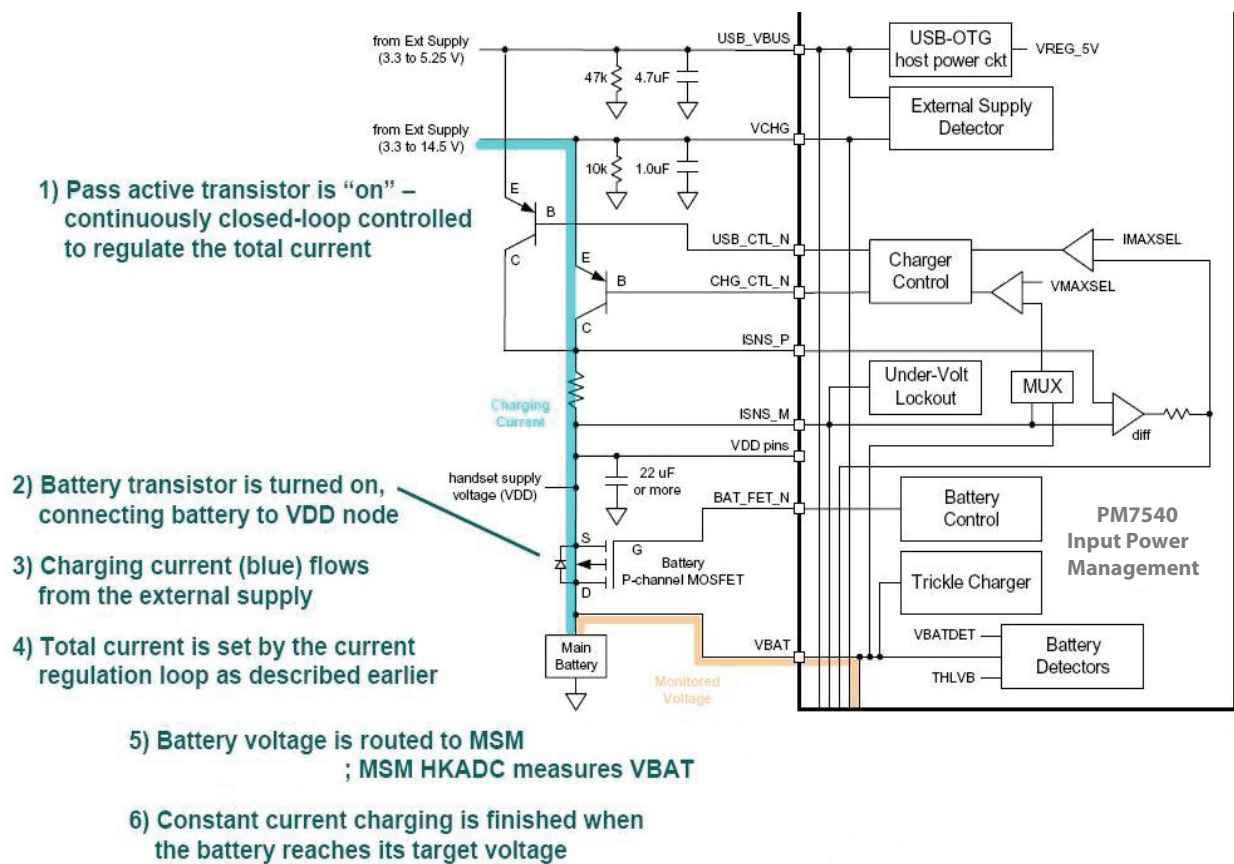


Figure. PM7540 Functional Block Diagram

## 3.11.3. Charging control

A programmable charging block in PM7540 is used for battery charging. It is possible to set limits for the charging current. The external supply typically connects directly to pin (VCHG). The voltage on this pin (VCHG) is monitored by detection circuitry to ascertain whether a valid external supply is applied or not. For additional accuracy or to capture variations over time, this voltage is routed internally to the housekeeping ADC via the analog multiplexer. PM7540 circuits monitor voltages at VCHARGER and ICHARGE pins to determine which supply should be used and when to switch between the two supplies. These pins are connected to the Source (or emitter) and Drain (or collector) contacts of the pass transistor respectively.



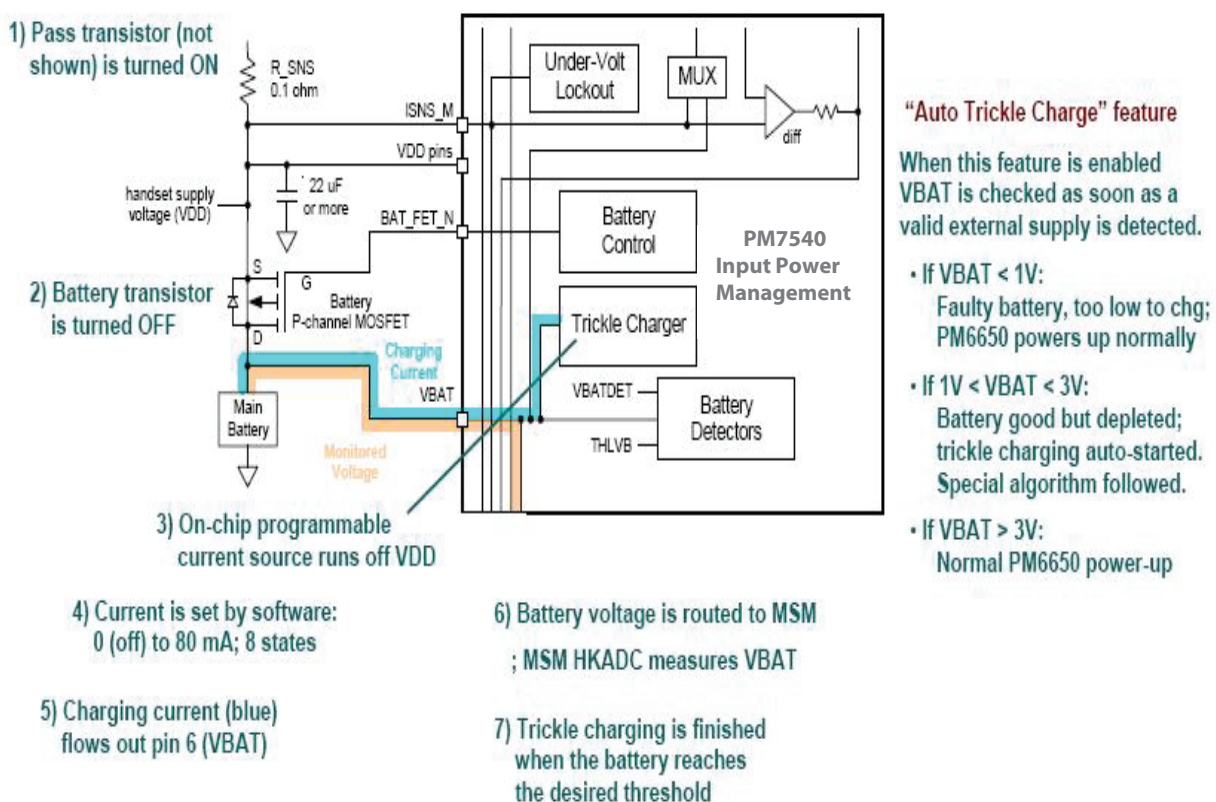
GM730/GM735 Battery Bar Display(Stand By Condition)

### 3. TECHNICAL BRIEF

#### Trickle Charging

Trickle Charging of the main battery, enabled through SBI control and powered from  $V_{DD}$ , is provided by the PM7540 IC. The trickle charger is on-chip programmable current source that supplies current from  $V_{DD}$  to pin (VBAT). Trickle charging can be used for lithium-ion and nickel-based batteries, with its performance specified below (3.2V). The charging current is set to 80mA.

Parameter	Min	Typ	Max	Unit
Trickle Current	60	80	100	mA



#### **Constant Current Charging**

The PM7540 IC supports constant current charging of the main battery by controlling the charger pass transistor and the battery transistor. The constant current charging continues until the battery reaches its target voltage, 4.2V.

#### **Constant Voltage Charging**

Constant voltage charging begins when the battery voltage reaches a target voltage, 4.2V. The end of constant voltage charging is commonly detected 10% of the full charging current.

- Charging Method : CC & CV (Constant Current & Constant Voltage)
- Maximum Charging Voltage : 4.2V
- Maximum Charging Current : 900mA
- Nominal Battery Capacity : 1010mAh
- Charging time : Max 2.5h (Except time trickle charging)
- Full charge indication current (icon stop current) : 50mA
- Cut-off voltage : 3.20V

## 3. TECHNICAL BRIEF

### 3.12. External memory interface

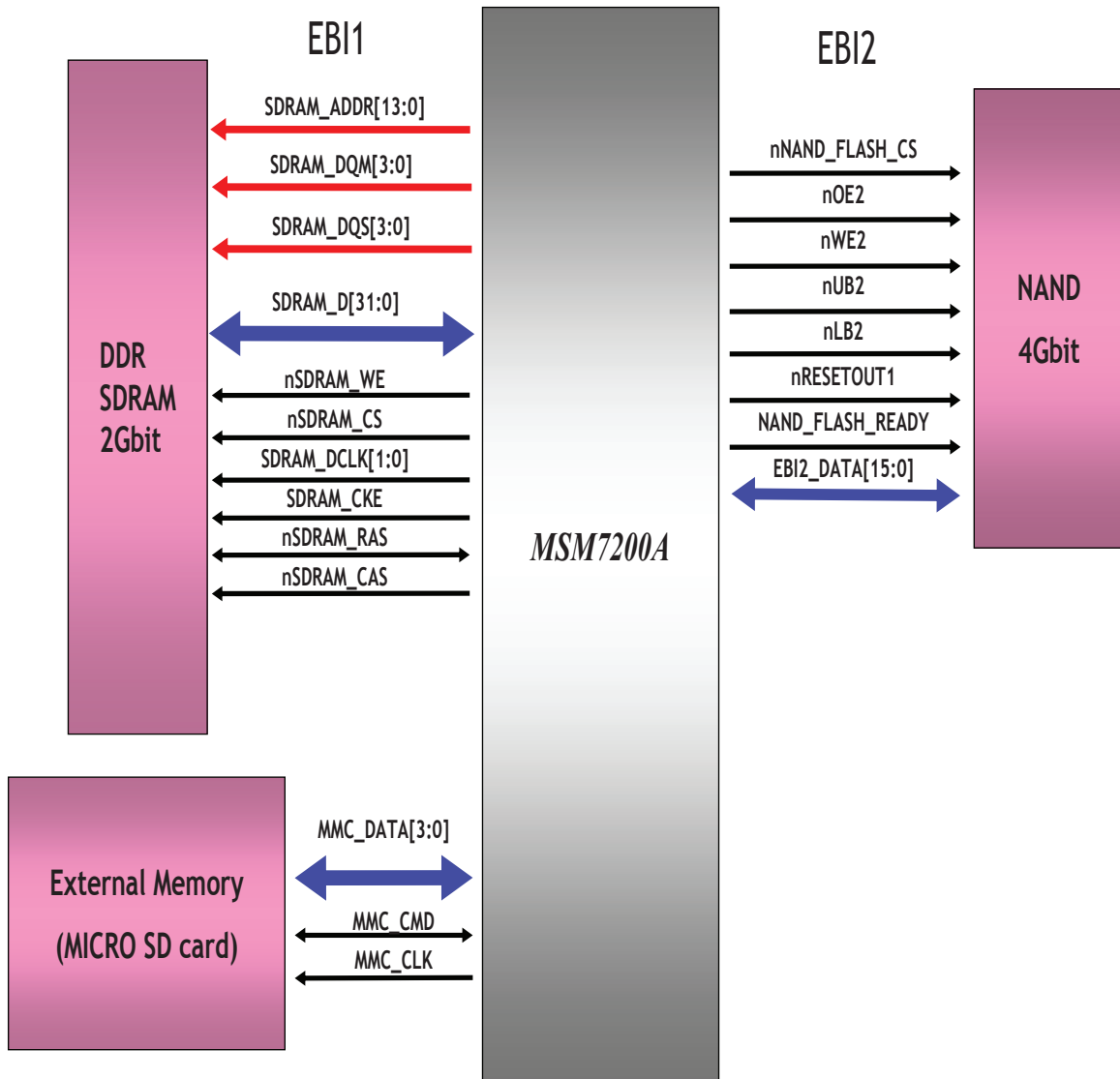
#### A. MSM7200A

The MSM7200A device was designed to provide two distinct memory interfaces. EBI1 was targeted for supporting DDR synchronous memory devices. EBI2 was targeted towards supporting slower asynchronous devices such as LCD, NAND flash, SRAM, NOR flash etc. To support the high-bandwidth, high-density, and low-latency requirements of the advanced on-chip applications, the MSM7200A IC has two high-speed, high-performance memory slave interfaces: the external bus interface 1 (EBI1) and the stack memory interface (SMI). To achieve higher bandwidth and better use of the memory device interface, the SMI accepts multiple commands for the external memory device. The SMI interface acts as a slave device to all of the bus masters within the MSM device. The masters arbitrate to gain access to the SMI, and upon obtaining the access, they issue commands to the SMI. The bus masters are connected to the SMI through an advanced extensible interface (AXI) bus bridge (or global interconnect block) and communicate over a 64-bit, non-blocking AXI bus protocol. The AXI bus bridge provides the arbitration logic for all of the bus masters.

- EBI1 Features
  - Support for only low-power memories at 1.8-V I/O power supply voltage
  - AXI bus frequencies up to 133 MHz
  - A 16-bit/32-bit static and dynamic memory interface
- DDR SDRAM interface features include:
  - Supports both 32-bit DDR SDRAM devices, up to 133-MHz bus speed
  - Supports auto precharge and manual precharge
  - Supports partial refresh
  - Separate CKE pin per chip-select to support partial operation mode
  - Idle power down to save idling power consumption
    - EBI2 Features
  - Support for asynchronous FLASH and SRAM(16bit & 8bit).
  - Interface support for byte addressable 16bit devices(UB\_N & LB\_N signals).
  - 2Mbytes of memory per chip select.
  - Support for 8 bit/16bit wide NAND flash.
  - Support for parallel LCD interfaces, port mapped of memory mapped(8 or 16 bit)
- Multi Chip Package : DDR SDRAM and NAND Flash merged 1 package
- 2Gbit Mobile DDR SDRAM(64Mb x32) / 4Gbit NAND Flash

Interface Spec				
Part Name	Product Gr	Maker	Operation Voltage (Flash / DRAM)	Speed (Flash / DRAM)
H8BES0UQ0MCR-46M	NAND	Hynix	1.8V	45ns / 333MHz
	SDRAM		1.8V	

**Table#1. External memory interface for GM730/GM735**



**Figure. Simplified Block Diagram of Memory Interface**



### 3.13. H/W Sub System

#### 3.13.1. RF Interface

##### A. RTR6285 (WCDMA\_Tx, GSM\_Tx/Rx)

MSM7200A controls RF part(RTR6285) using these signals.

- SSBDT : SSBI I/F signals for control Sub-chipset
- TX\_ON : Power AMP on RF part
- RX0\_I/Q\_M/P,TX\_I/Q\_M/P : I/Q for T/Rx of RF
- TX\_AGC\_ADJ : control the gain of the Tx signal prior to the power amplifier
- DAC\_REF : Reference input to the MSM Tx data DACs

##### B. the others

- TRK\_LO\_ADJ : TCXO(19.2M) Control
- PA\_ON0/PA\_RANGE0 : WCDMA(2100) TX Power Amp Enable
- ANT\_SEL[0-2] : Ant Switch Module Mode Selection(WCDMA,GSM Tx/Rx,DCS-PCS Tx/Rx)
- GSM\_PA\_BAND : GSM/DCS-PCS Band Selection of Power Amp
- GSM\_PA\_RAMP : Power Amp Gain Control of APC\_IC
- GSM\_PA\_EN : Power Amp Gain Control Enable of APC\_IC



### 3. TECHNICAL BRIEF

#### 3.13.2. MSM Sub System

##### 3.13.2.1. USIM Interface

SIM interface scheme is shown in Figure.

And, there control signals are followed

- USIM\_CLK : USIM Clock
- USIM\_Reset : USIM Reset
- USIM\_Data : USIM Data T/Rx

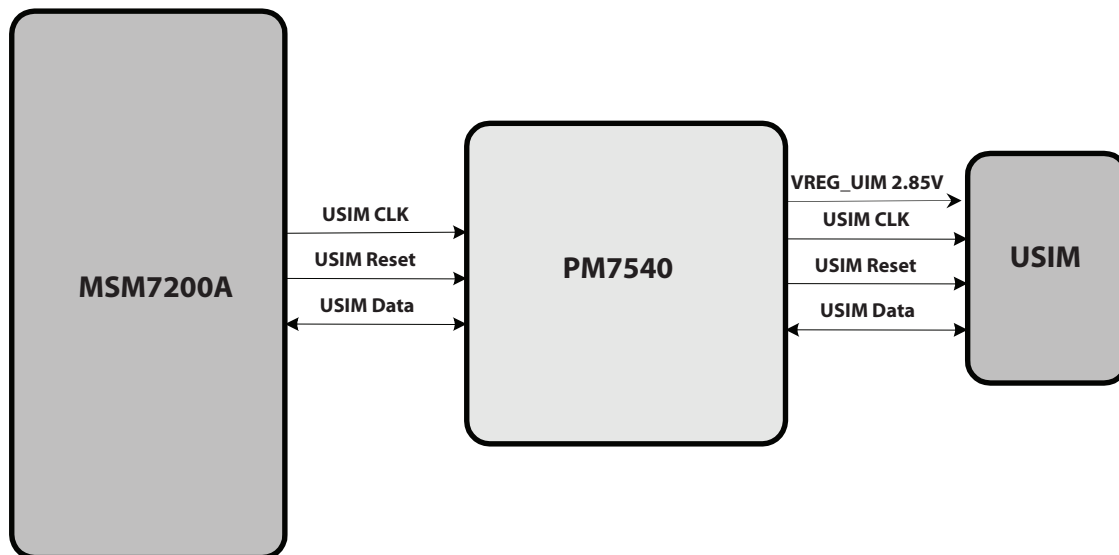


Figure. SIM Interface

##### 3.13.2.2. UART Interface

UART signals are connected to MSM GPIO through IO connector with 115200 bps speed.

GPIO_Map	Name	Note
GPIO_86	UART3_RX	Data_Rx
GPIO_87	UART3_TX	Data_Tx

Table. UART Interface

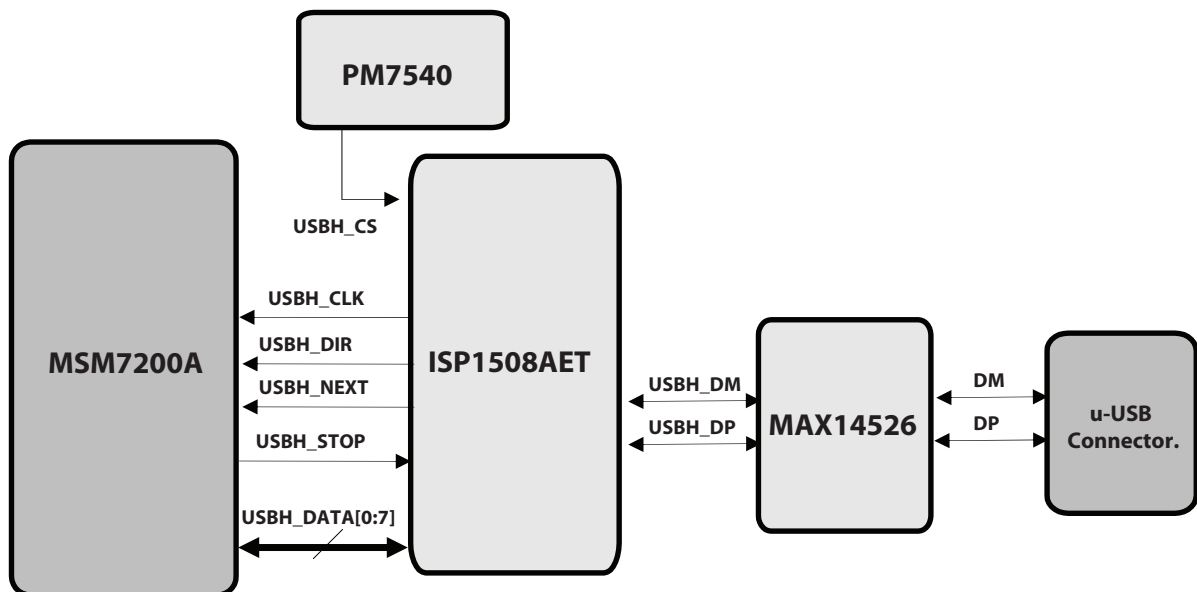
### 3.13.2.3. HS-USB

The universal serial bus (USB) is an interconnection standard widely supported by the electronic industry. The USB2.0 spec defines data rates as low-speed (1.5 Mbps), full-speed (12Mbps) and hi-speed (480 Mbps). When two devices are connected via a USB interface, one of the devices must act as a host, and the other device must act as a peripheral. The host is responsible for initiating and controlling traffic on the bus. The USB specification requires personal computers (PCs) to act as hosts, and other devices such as printers, keyboards, mice, etc. to act as peripherals. The OTG supplement creates a new class of devices called OTG devices. OTG devices can act as either hosts or peripherals, depending upon how they are connected and/or used.

The MSM7200A device contains a new USB high-speed function that is based on a embedded UTMI+ core with a UTMI+ low pin interface (ULPI) compatible port. The MSM device's ULPI interface connects to an external ULPI PHY chip to complete the design. The ULPI core embedded in the MSM along with the PM7540 IC and a USB high-speed PHY IC provide support for the high-speed interface.

Name	Note
USBH_CLK	Input clock from PHY
USBH_DIR	Controls the direction of USBH_DATA. When high, data is driven into the MSM.
USBH_NEXT	Used by the PHY to throttle data.
USBH_STOP	Signals the end of a USB transmit packet or a register write operation, and optionally stops any receive.
USBH_DATA[0:7]	Bi-directional data pin

**Table. HSUSB Signal Interface**



**Figure. USB block(MSM7200A Side & ISP1508AET, MAX14526 Side)**

### 3. TECHNICAL BRIEF

#### 3.13.3. Key Pad

There are 6 main key buttons that are controlled by MSM7200A. Refer to the Keypad circuit. 'Power Button' Key is connected to PMIC(PM7540:KEPD\_PWR\_N).

	KEY_COL[0]	KEY_COL[1]	OJ_Nrst
KEY_ROW[0]	VOL_UP	VOL_DOWN	Optical Joystick
KEY_ROW[1]	CAMERA	OK	
KEY_ROW[2]	FOCUS	-	

Table. Key Matrix Mapping Table

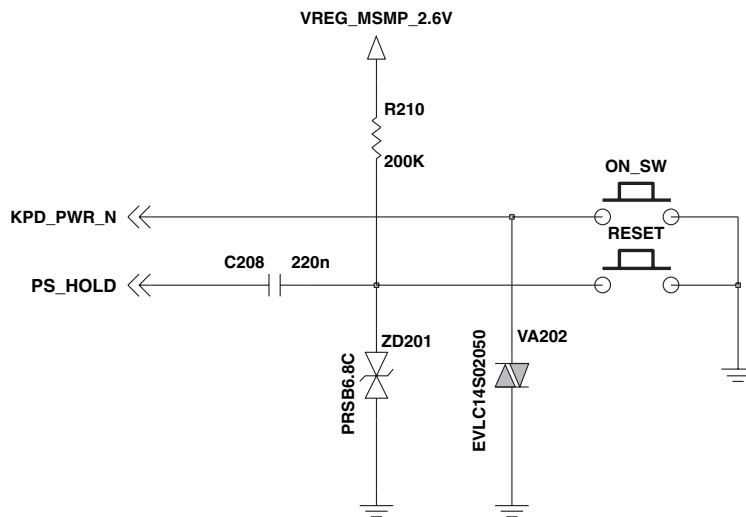


Figure. Power ON / OFF & Suspend Button Keypad circuit

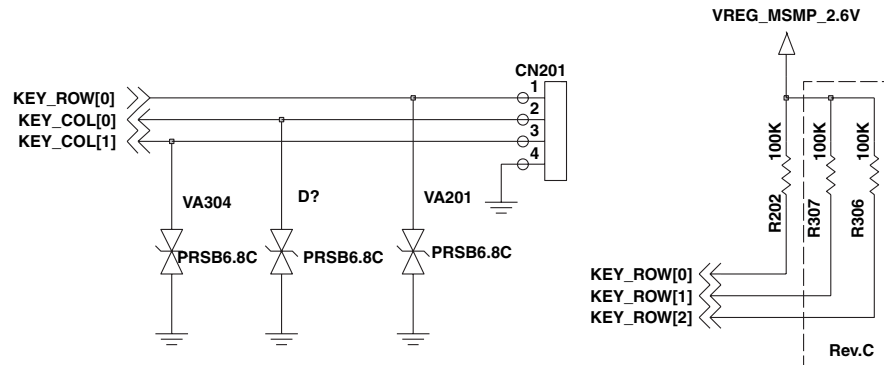


Figure. Volume Keypad Circuit

## CAMERA KEY

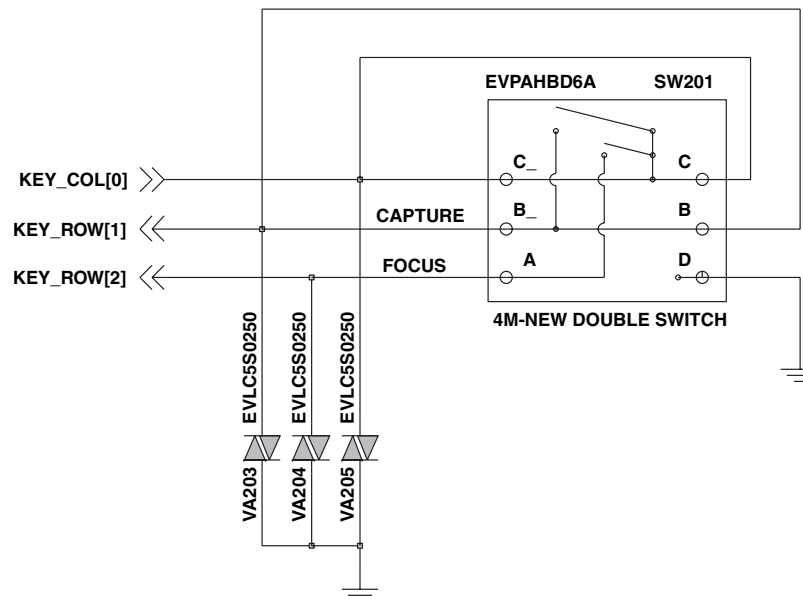


Figure. Camera Keypad Circuit

### 3. TECHNICAL BRIEF

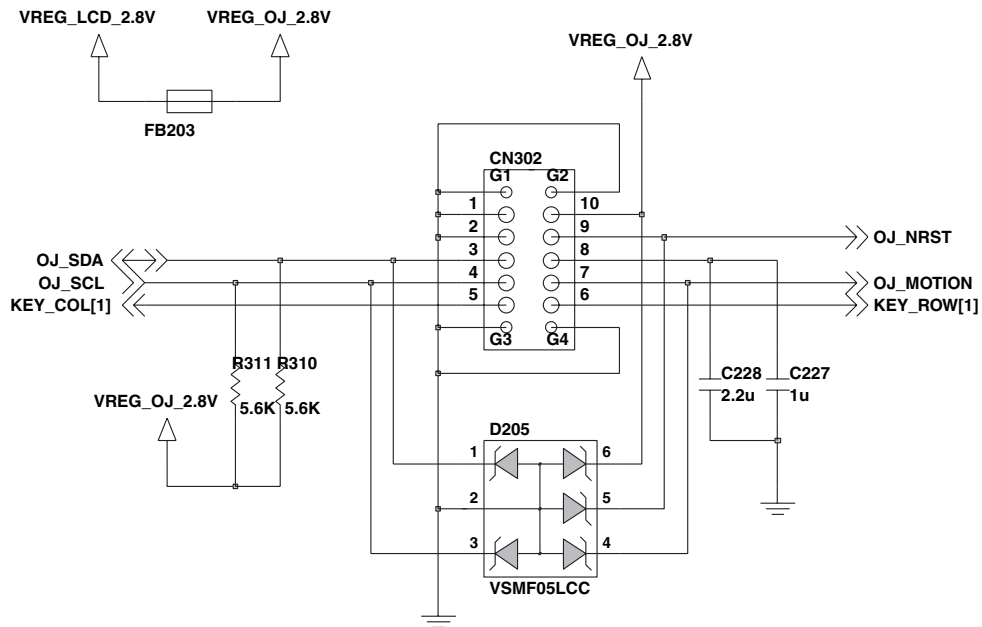


Figure. Optical Joystick Keypad Circuit

## 3.13.4. Touch Interface

In GM730/GM735, 4-wire touch screen panel is used for user input method. Two resistive layers make up a 4-wire touch screen panel and are separated by insulating dots. The inside surface of each layer is coated with a transparent metal oxide coating that generates a gradient across each layer when voltage is applied.

Signal name	Pin number	Description		Pad type		Voltage
		4-wire	5-wire	4-wire	5-wire	
TS_LR	D1	Ym	LR	I/O	O	Analog
TS_LL	D2	Xm	LL	I/O	O	Analog
TS_UR	E1	Yp	UR	I/O	O	Analog
TS_UL	E2	Xp	UL	I/O	O	Analog
WIPER	C1	Unused	Wiper	Unused	I	Analog

Table. MSM7200 Touch screen connections

Parameter	Min	Nom	Max	Unit
Supply voltage $V_{DD}$	2.5	2.6	2.7	V
Ambient operating temperature $T_a$	-40	25	95	°C
Touch screen panel resistance	200		1000	$\Omega$
Touch screen panel capacitance	0.1		10	nF

Table. Recommended operation conditions

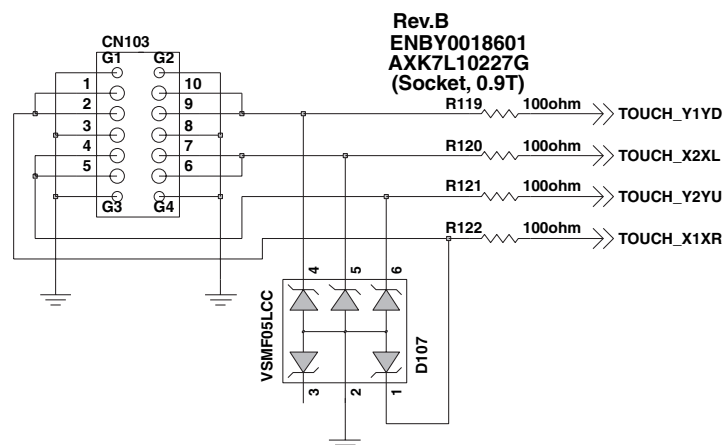


Figure. Touch screen circuit



### 3. TECHNICAL BRIEF

#### 3.13.5. LED(KEY/Indicator) Light

There are 2 White LEDs in sub key backlight circuit, which are driven by KPD\_DR\_N line from PM7540.

#### **KEY BACKLIGHT LED**

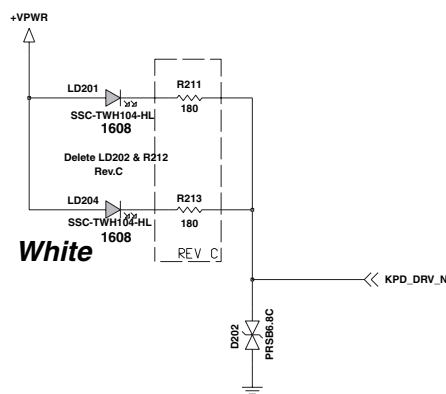


Figure. Schematic of Power Keypad back light circuit

In addition, there is 1 RGB LED in LED Notification-RGB backlight circuit, which are driven by KEY\_BACKLIGHT line from MSM7200 GPIO90/89/88.

#### **Notification RGB LED**

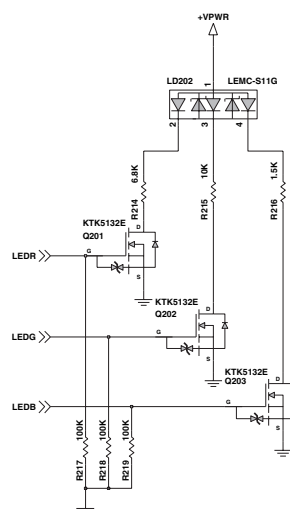


Figure. Schematic of KEY back light circuit

### 3.14. Audio and sound

#### 3.14.1. Overview of Audio & Sound & BT path

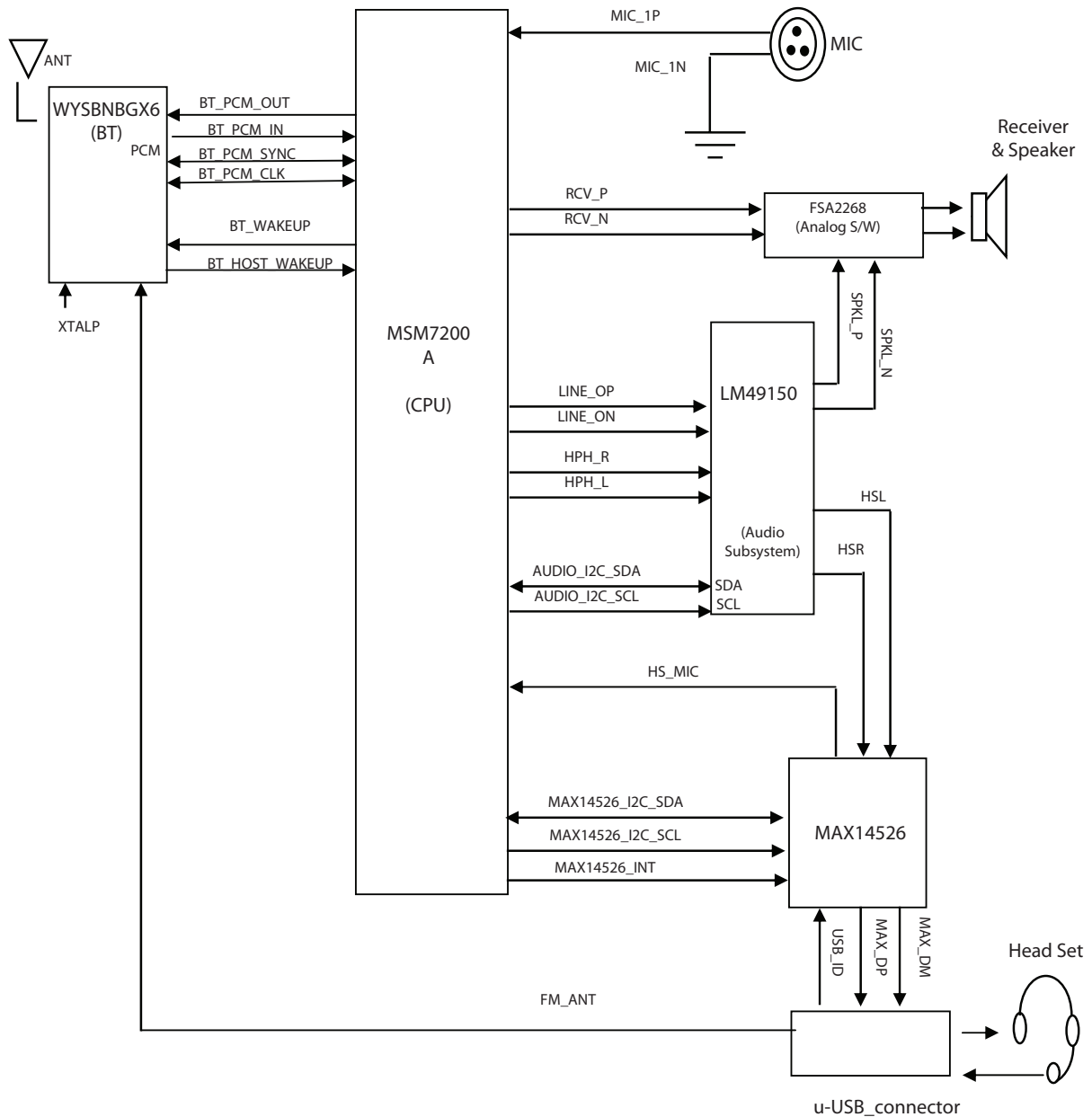


Figure. Block diagram of Audio & Sound path

### 3. TECHNICAL BRIEF

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#### 3.14.2. Audio signal processing & interface

##### 3.14.2.1 MSM7200A audio interface

The MSM7200A audio front end comprises the stereo wideband codec, PCM interface, and additional DSP audio processing.

The stereo wideband codec allows the MSM7200A device to support stereo music/ringer melody applications in addition to the 8 kHz voice band applications on the forward link. In the audio transmit path, the device operates as 13-bit linear converter with software, selectable 8 kHz and 16 kHz sampling rate. In the audio receive path, the device operates as a software-selectable 13-bit or 16-bit linear converter with software selectable 8 kHz, 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz, or 48 kHz sampling rate. Through software, the Rx path can be configured as either a mono or stereo output.

New to the MSM7200A device is a transmit (Tx) ADC path that now supports stereo wideband sampling.

The integrated codec contains all of the required conversion and amplification stages for the audio front end. The codec operates as a 13-bit linear codec with the transmit (Tx) and receive (Rx) filters designed to meet ITU-T G.712 requirements. The codec includes a programmable side tone path for summing a portion of the Tx audio into the Rx path. An on-chip voltage/current reference is provided to generate the precise voltages and currents required by the codec. This circuit requires a single capacitor of 0.1  $\mu$ F to be connected between the CCOMP and GND pins. The on-chip voltage reference also provides a microphone bias voltage required for electret condenser microphones typically used in handset applications. The MICBIAS output pin is designed to provide 1.8 V DC while delivering as much as 1 mA of current. Audio decoder summing and headset switch detection are included.

The codec interface includes the amplification stages for both the microphone and earphone. On the transmit (Tx) path, the interface supports two differential microphone inputs, a differential auxiliary input, and a stereo line input. On the receive (Rx) path the interface supports one differential earphone output, a stereo single-ended headphone output, one differential auxiliary output, and stereo single-ended line outputs.

The codec is configured by the codec SBI registers. The codec interface is shown in Figure.

Also part of the audio front end is the PCM interface. The PCM interface allows for an external codec to be used instead of the internal codec. This interface can be used in I2S mode which will allow for an external stereo DAC to be used.

Finally, the audio front end includes additional DSP audio processing that does gains, filtering and other audio processing.

The DSP audio processing is configured through the QDSP5000 command types and is not directly controlled by the microprocessor.

### 3. TECHNICAL BRIEF

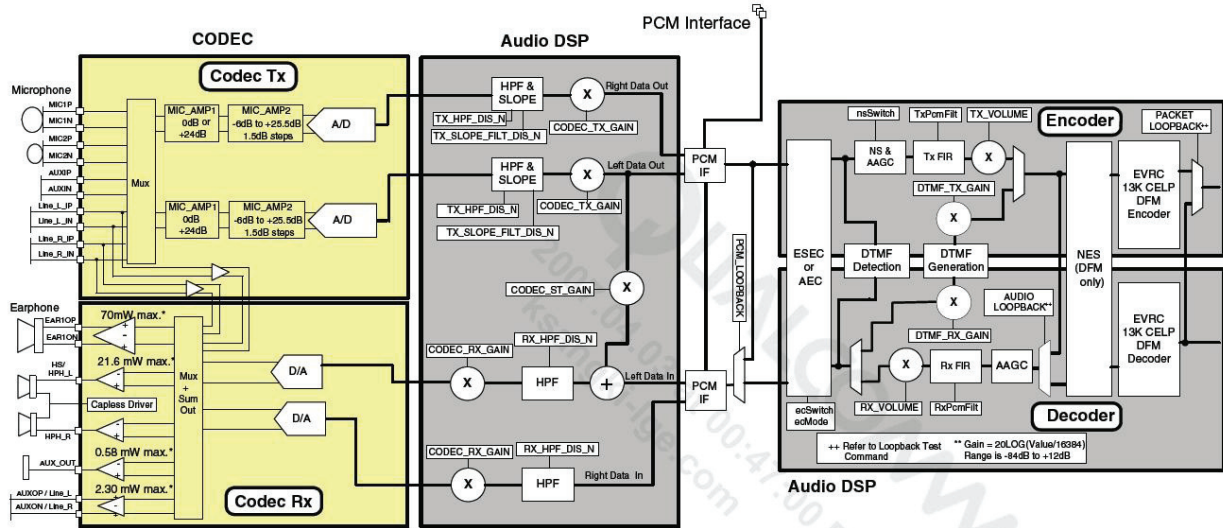


Figure. Detailed diagram of MSM7200A audio interface

### 3. TECHNICAL BRIEF

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#### 3.14.2.2 LM49150 audio interface

The LM49150 is a fully integrated audio subsystem designed for portable handheld applications such as cellular phones.

Part of National's Power Wise® product family, the LM49150 consumes very low power in the various modes of operation and still providing great audio performance. The LM49150 combines a 1.25W mono E2S (Enhanced Emission Suppression)

class D amplifier, 135mW Class AB earpiece amplifier, 42mW/channel stereo ground reference headphone amplifiers, volume control, and mixing circuitry into a single device.

The filterless class D amplifier delivers 1.25W into an 8 $\Omega$  load with <1% THD+N with a 5V supply. The E2S class D amplifier features a patented, ultra low EMI PWM architecture that significantly reduces RF emissions while preserving audio quality.

The 42mW/channel headphone drivers feature National's ground referenced architecture that creates a ground-referenced output from a single supply, eliminating the need for bulky and expensive DC-blocking capacitors, saving space and minimizing cost.

The LM49150 features a fully differential mono input, and two single-ended stereo inputs. The three inputs can be mixed/multiplexed to either the speaker or headphone amplifiers.

Each input channel has an independent, 32-step digital volume control. The headphone output stage features an additional, 8-step gain control, while the speaker output stage has a selectable 6dB or 12dB gain. The mixer, volume control and device mode select are controlled through an I2C compatible serial interface.

The LM49150's superior click and pop suppression eliminates audible transients on power-up/down and during shutdown.

The LM49150 is available in a ultra-small 20-bump micro SMD package (2.225mm X 2.644mm).

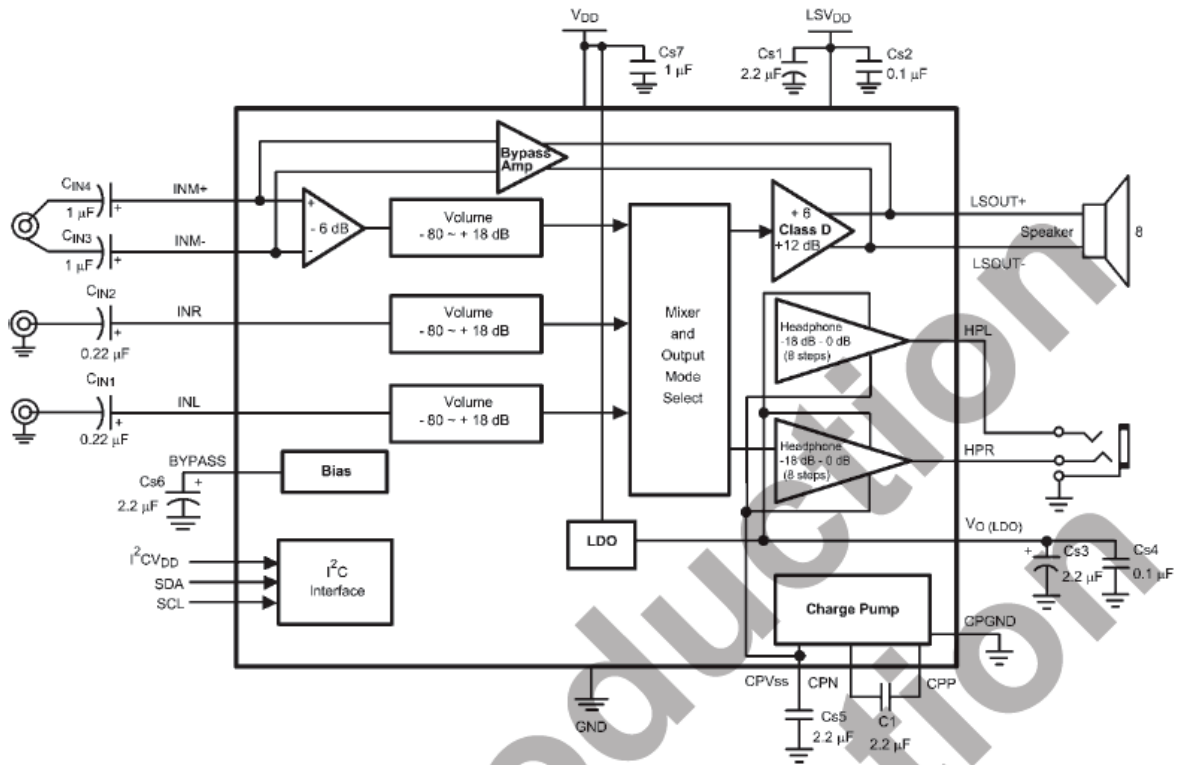
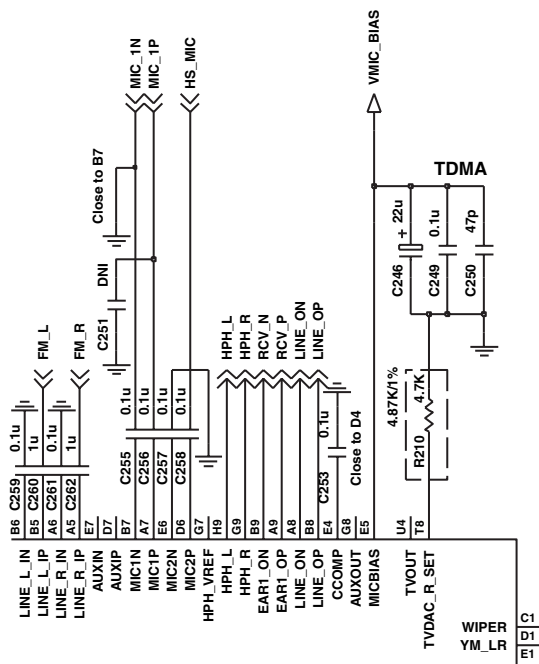
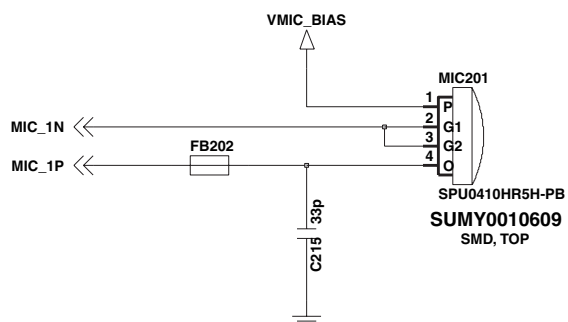


Figure. Detailed diagram of LM49150 audio interface

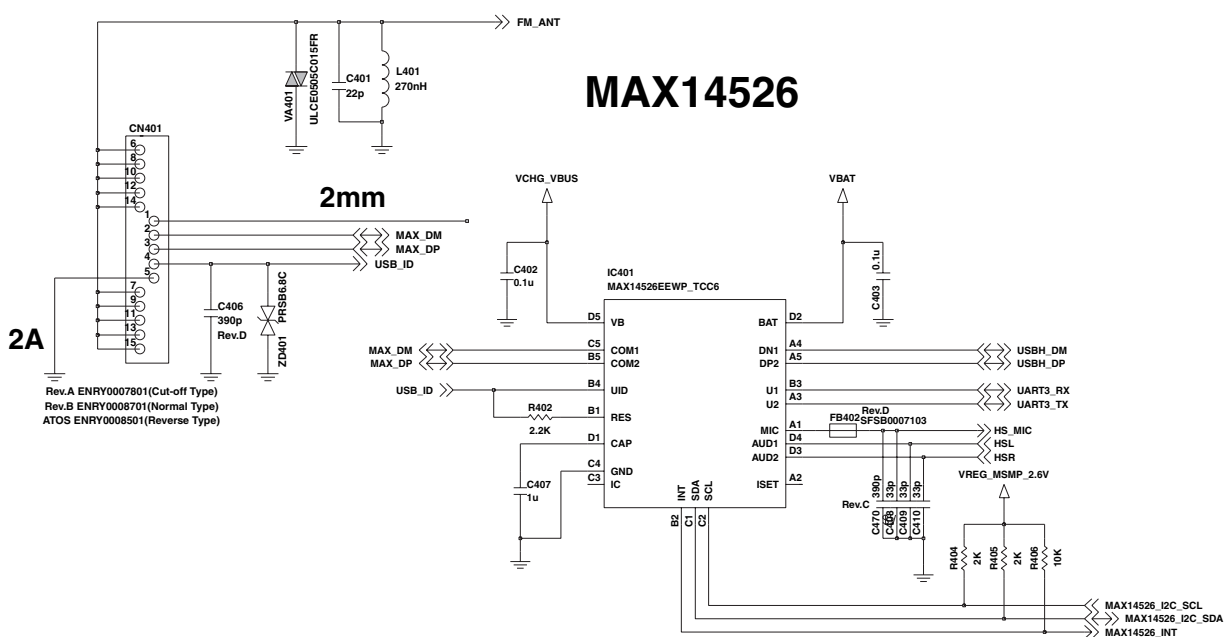
MSM7200A Block



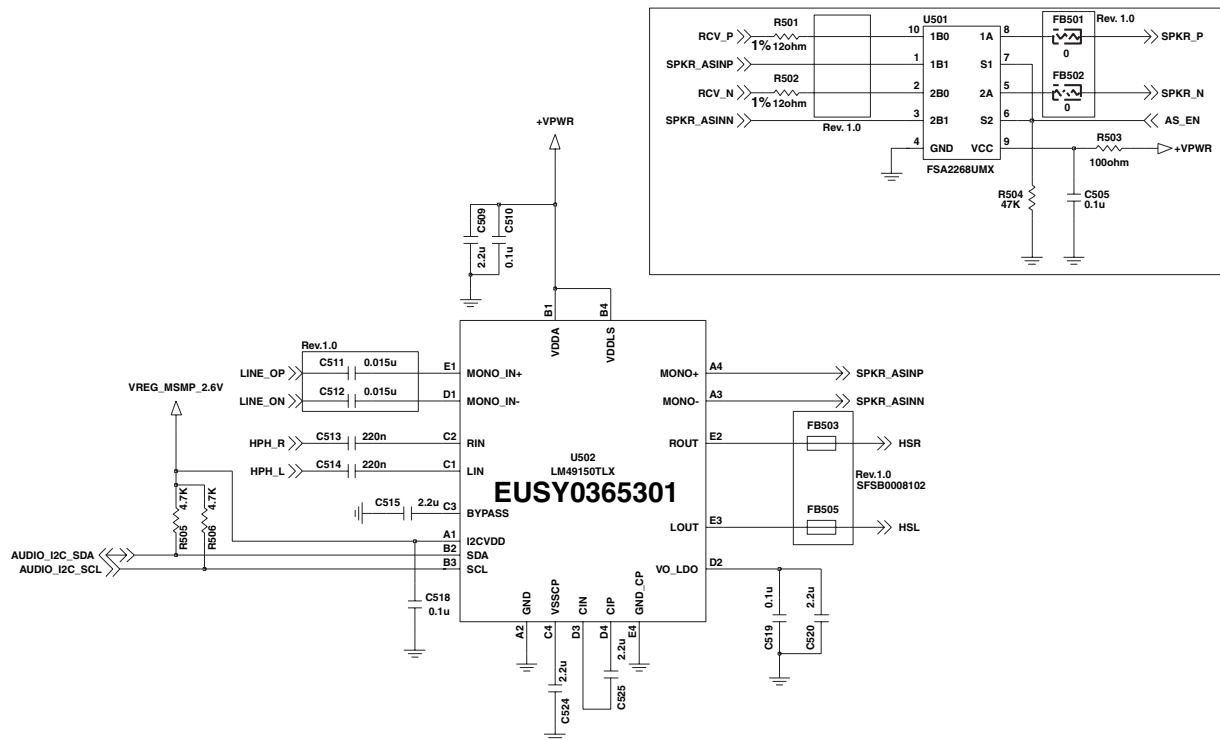
## Handset main MIC Block



## Head Set Jack Block



#### Audio Subsystem(LM49150) Block & Analog S/W





### 3. TECHNICAL BRIEF

## 3.15 Camera interface

GM730/GM735 has two cameras : 5M Pixel CMOS Camera and VGA camera.  
Below figures shows the 5M camera I/F and ISP Block.

### 3.15.1 5 Mega Camera Interface

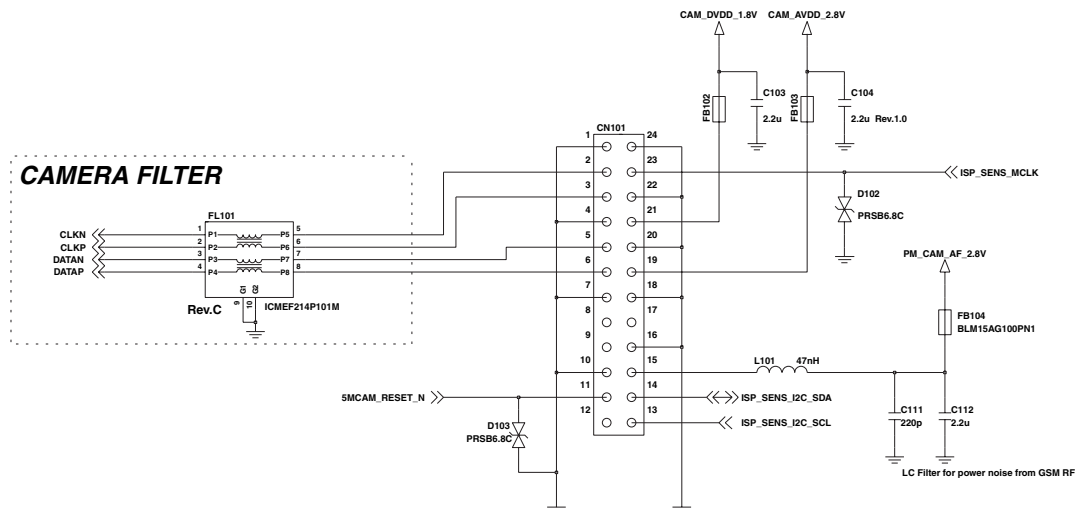
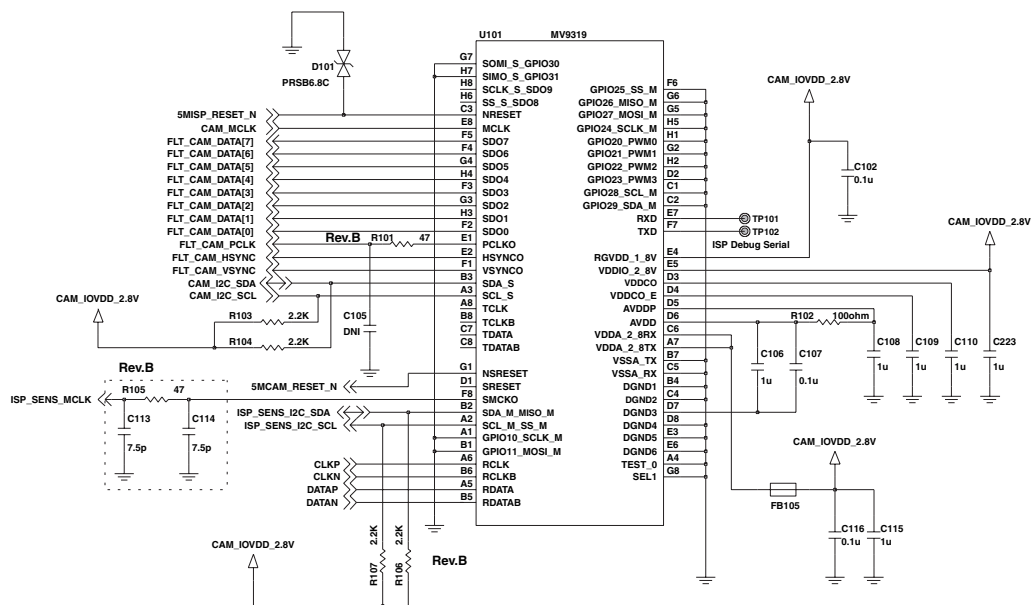


Figure. Schematic of 5 Mega Camera I/F



NO	NAME	TYPE	Description
1	GND	Ground	Ground
2	CLKN	Output	Clock line -
3	CLKP	Output	Clock line +
4	GND	Ground	Ground
5	DATAN	Output	Data line -
6	DATAP	Output	Data line +
7	GND	Ground	Ground
8	NC	NC	NC
9	NC	NC	NC
10	GND	Ground	Ground
11	5MCAM_RESET_N	Input	Camera reset (Active "L")
12	NC	NC	NC
13	I2C_SCL	Input	I2C Clock
14	I2C_SDA	Input/Output	I2C Data
15	PM_CAM_AF_2.8V	Power	AF Motor power (2.8V)
16	GND	Ground	Ground
17	NC	NC	NC
18	GND	Ground	Ground
19	CAM_AVDD_2.8V	Power	Analog Power (2.8V)
20	GND	Ground	Ground
21	CAM_DVDD_2.8V	Power	Digital Power (2.8V)
22	GND	Ground	Ground
23	ISP_SENS_MCLK	Input	Master clock input
24	GND	GND	GND

**Table. Interface between 5M Camera Module and SUB Board**

The 5M Camera module is connected to Sub board with 24pin Board to Board connector (GB042-24S-H10-E3000). Its interface is dedicated camera interface port in MSM7200A via ISP MV9319. The camera port supply 24MHz master clock to ISP and then ISP supply 24MHz master clock to camera module again and receive serial data from camera module. And ISP supply converted 8bits data, 48MHz pixel clock(max.15fps@ full resolution), vertical sync signal, horizontal sync signal, reset signal to MSM7200A again. The camera module is controlled by I2C port from MSM7200A via ISP.

### 3. TECHNICAL BRIEF

#### 3.15.2 VGA Camera Interface

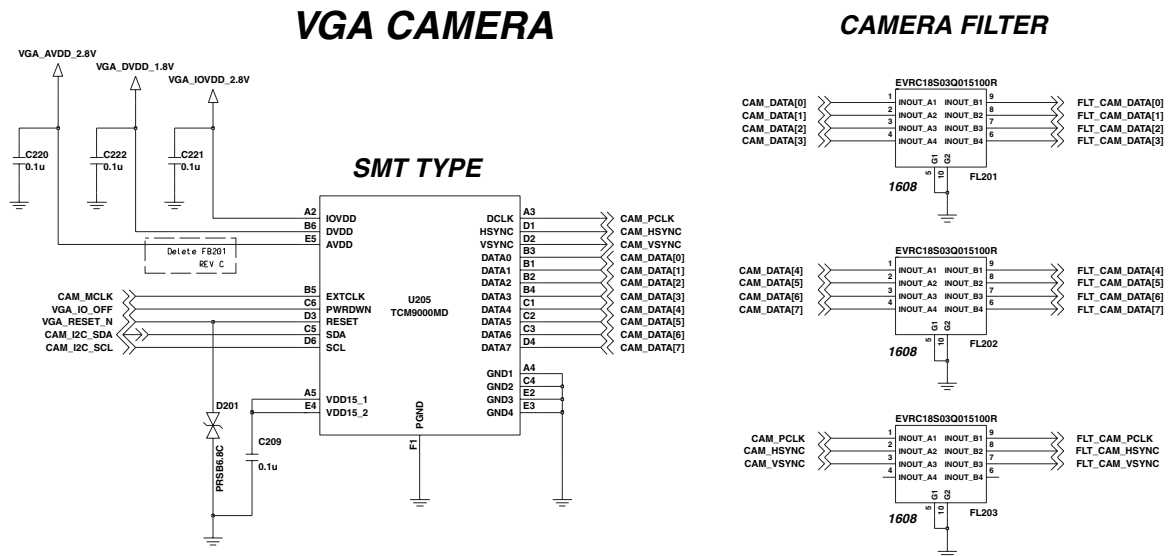


Figure. Schematic of VGA Camera Module and I/F

The VGA Camera module is mounted to Sub board. Its interface is dedicated camera interface port in MSM7200A. The camera port supply 24MHz master clock to camera module and receive 19.2MHz pixel clock (max.30fps@VGA), vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from MSM7200A.

## 3.15.3 LCD backlight LED Driver / Auto Luminous Control

U103(in Sub PCB) is a Sub PMIC(LCD Backlight LED Driver, Charge pump DCDC and Auto Luminous Control). This part is controlled by I2C of MSM7200A.

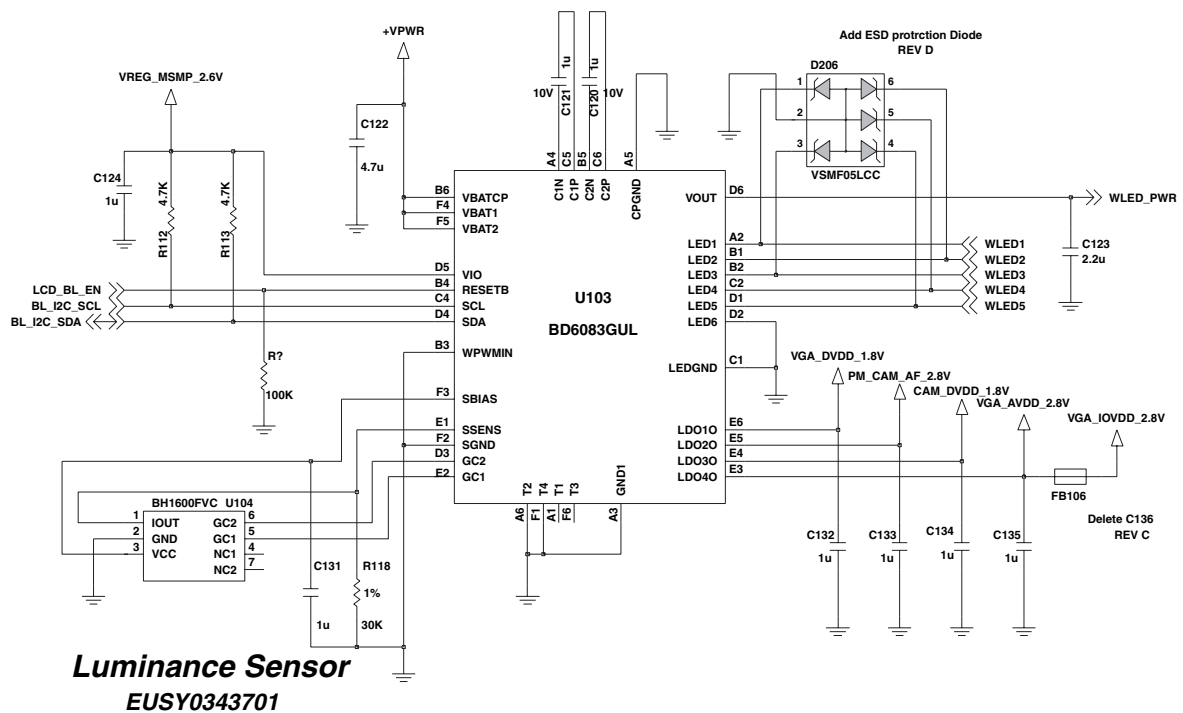


Figure. Schematic of Sub PMIC

### 3. TECHNICAL BRIEF

#### 3.15.4 LCD module

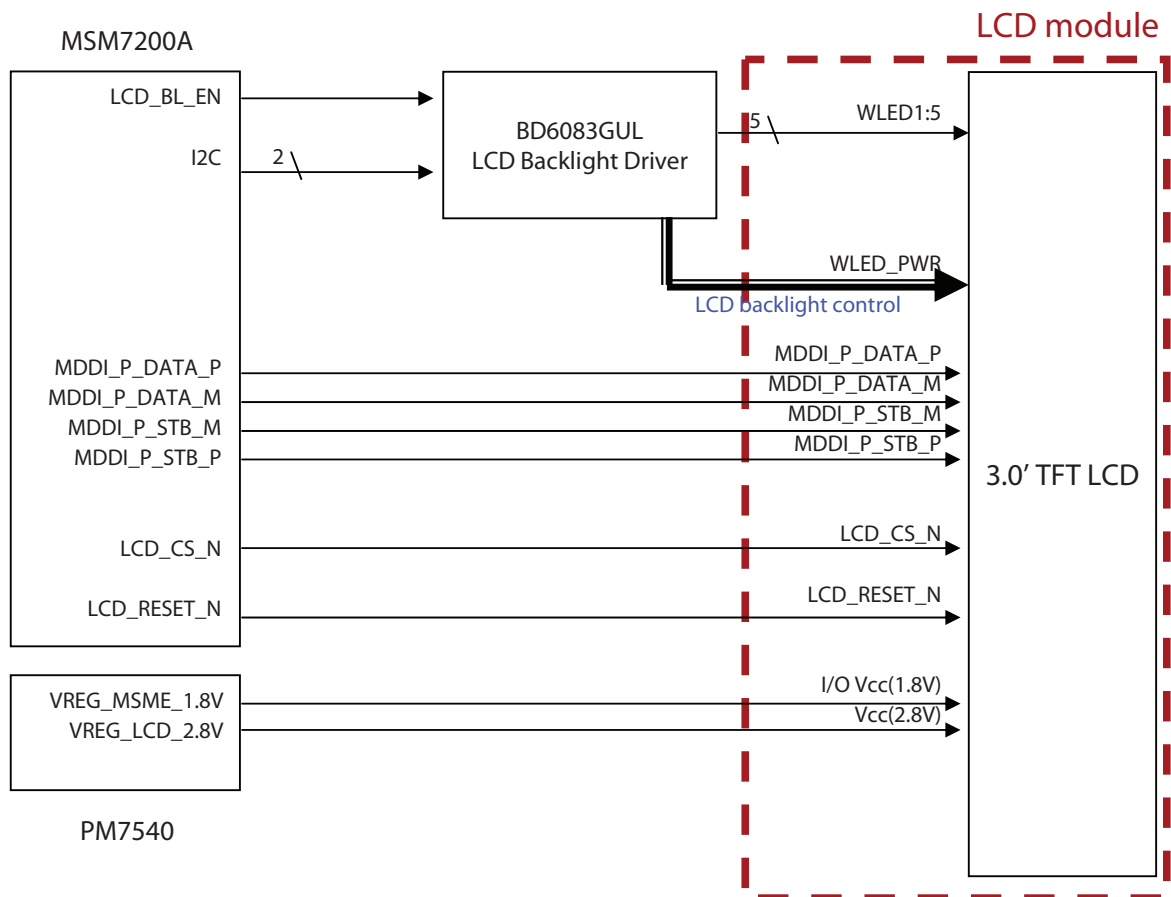


Figure. LCD I/F Block Diagram

## 3.15.5 Display

LCD module is connected to Main PCB with 20-pin connector (AXK820145WG). The LCD is controlled by MDDI Interface in MSM7200A.

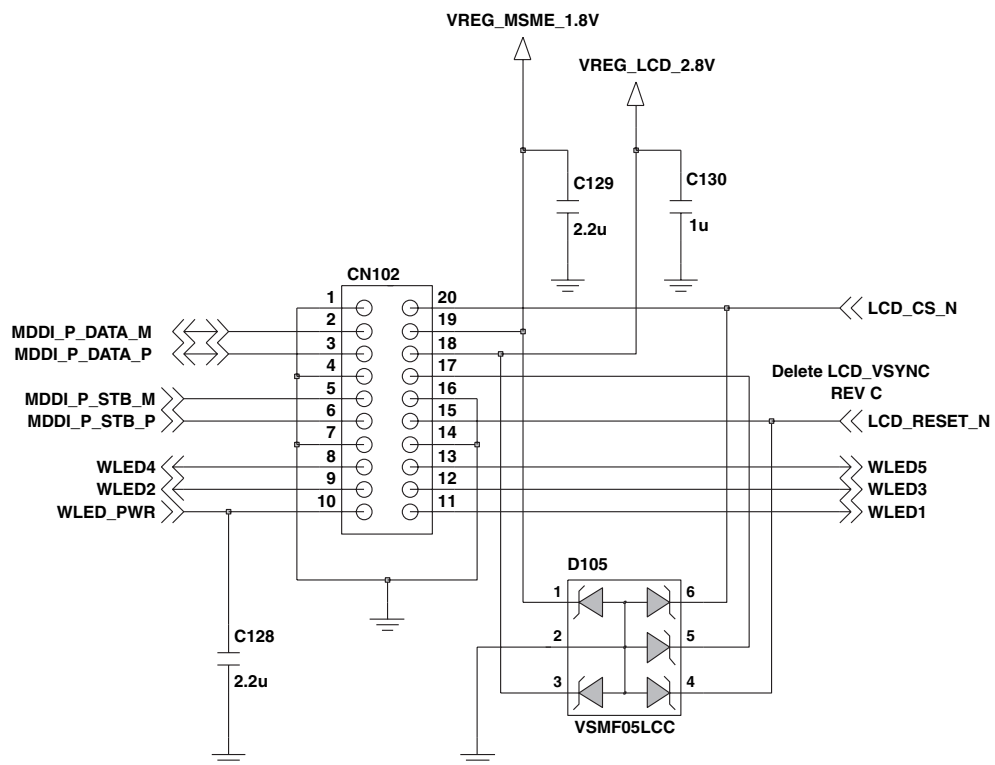


Figure. Schematic of LCD connector (in Sub PCB)

### 3. TECHNICAL BRIEF

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Pin No.	Signal	I/O	Function
1	LED(AN)	-	Power Supply for LED
2	LED(CA2)	-	Ground for LED
3	LED(CA4)	-	Ground for LED
4	GND	-	Ground
5	MDDI STB P	I	MDDI strobe positive signal
6	MDDI STB M	I	MDDI strobe negative signal
7	GND	-	Ground
8	MDDI DATA P	I	MDDI data positive signal
9	MDDI DATA M	I	MDDI data negative signal
10	GND	-	Ground
11	CS	I	Chip Select
12	I/OVcc (1.8V)	-	Power Supply for Interface
13	Vcc (2.8V)	-	Power Supply for Logic and Analog
14	VSYNC-OUT	O	Frame Head Pulse Signal
15	GND	-	Ground
16	RESET	I	Reset
17	GND	-	Ground
18	LED(CA5)	-	Ground for LED
19	LED(CA3)	-	Ground for LED
20	LED(CA1)	-	Ground for LED

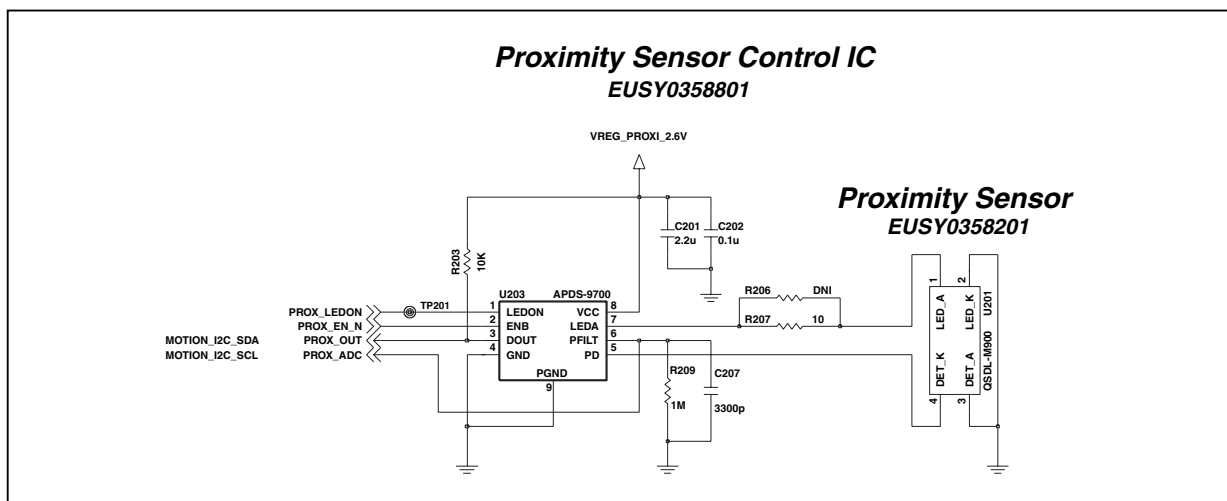
**Table. Interface between LCD Module and Main Board**

## 3.16 Proximity Sensor

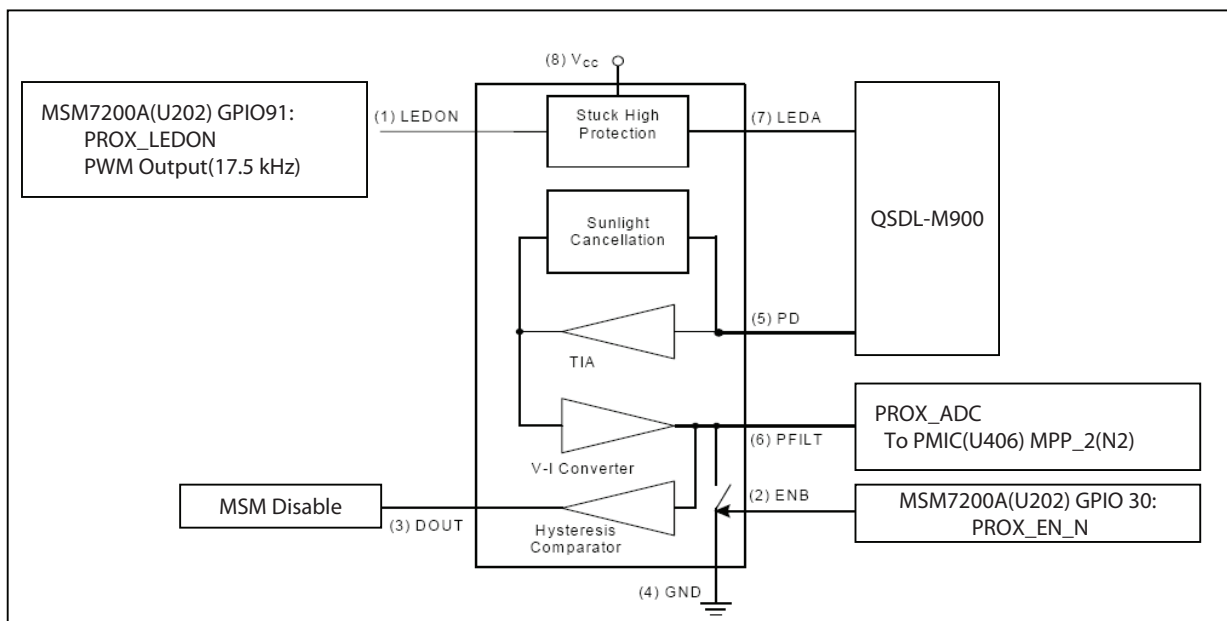
When call connected, the object is moved nearer to the proximity sensor.  
LCD backlight and Touch screen is disable operation automatically.

U505 : APDS-9700 is the optical sensor control IC.  
U504 : QSDL-M900 is Optical proximity sensor. (IrDA)

**Figure. Proximity Sensor Schematic**



**Figure. Proximity Sensor Block Diagram**





### 3. TECHNICAL BRIEF

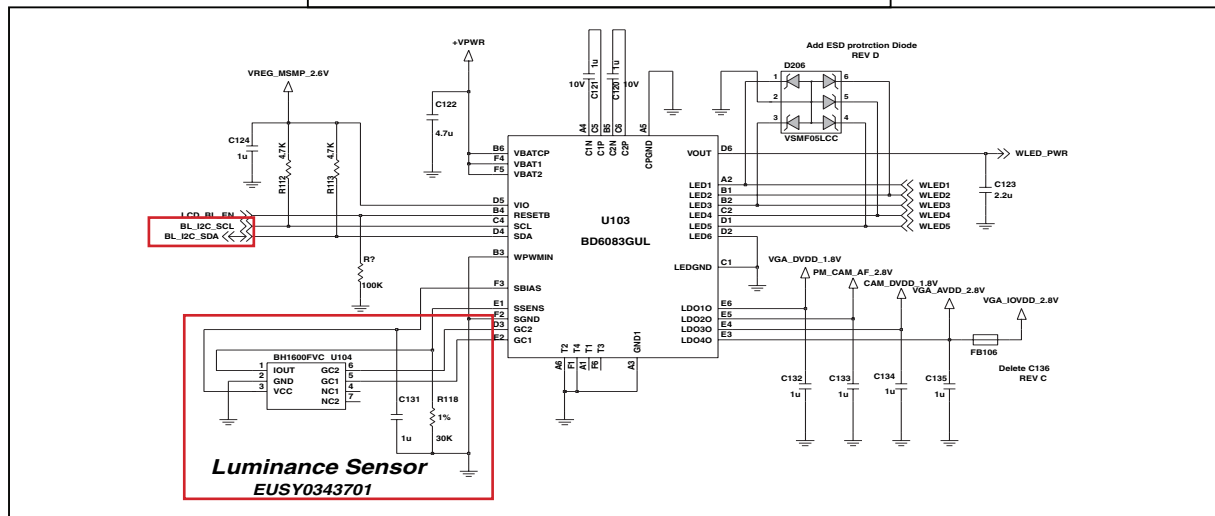
#### 3.17 Luminance Sensor

When ALC sensor turn on, automatically controls brightness of the display backlight.

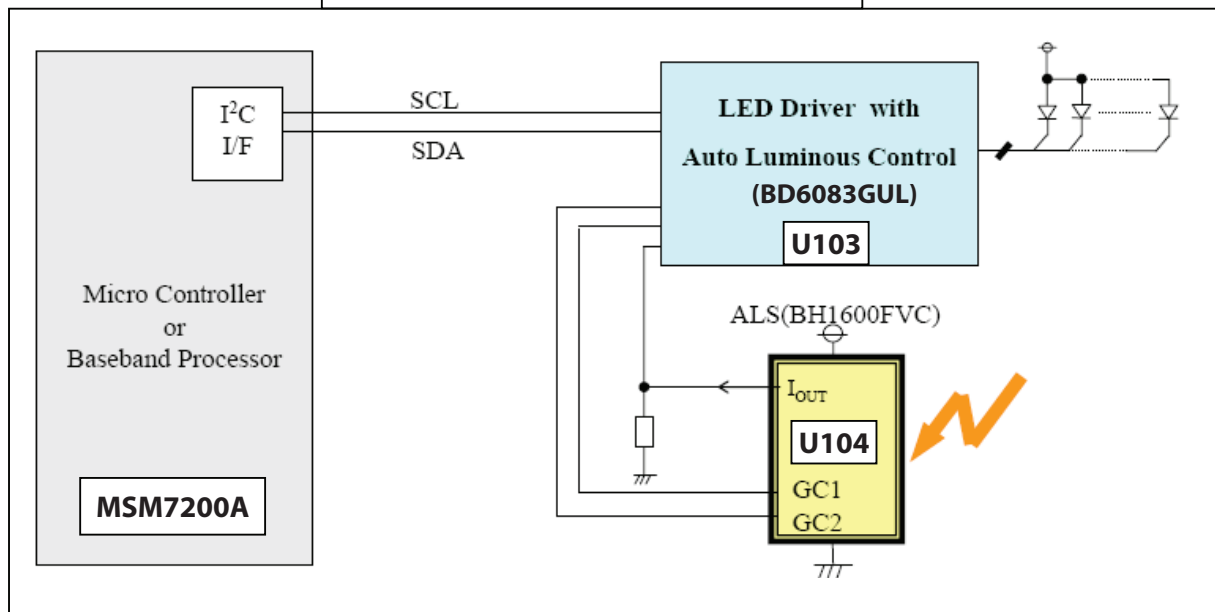
U103 : Backlight driver IC (BD6083) used I2C interface to MSM7200A

U104 : Luminance Sensor

Luminance Sensor Schematic



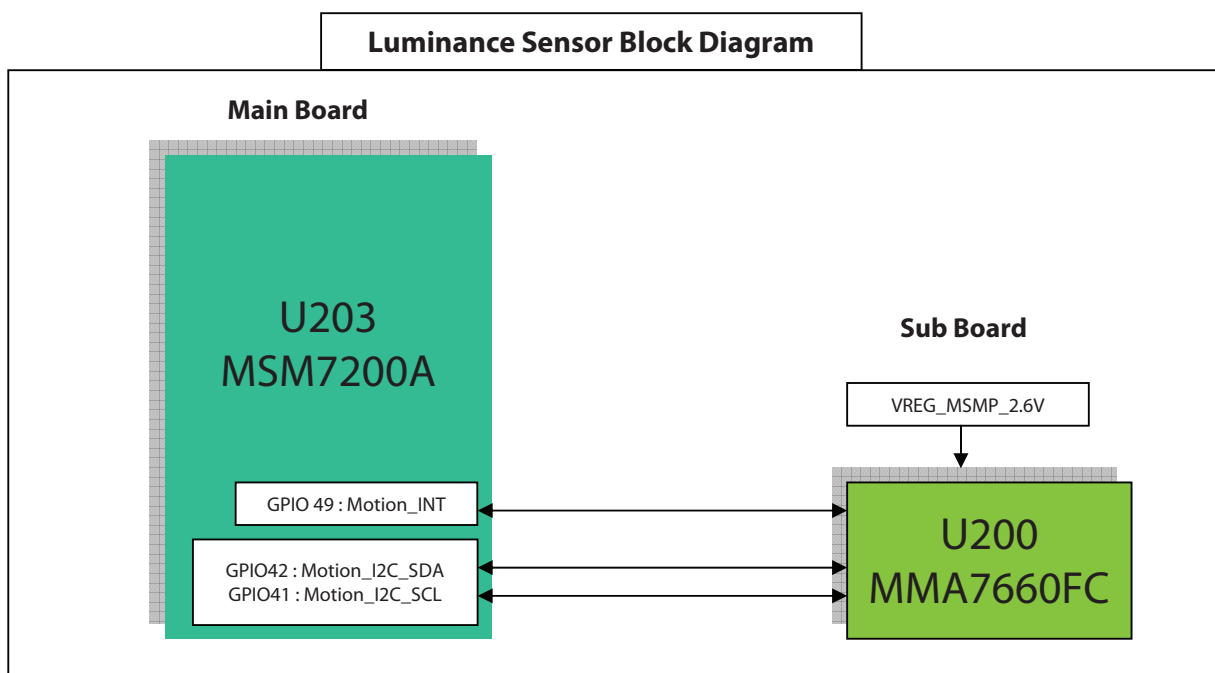
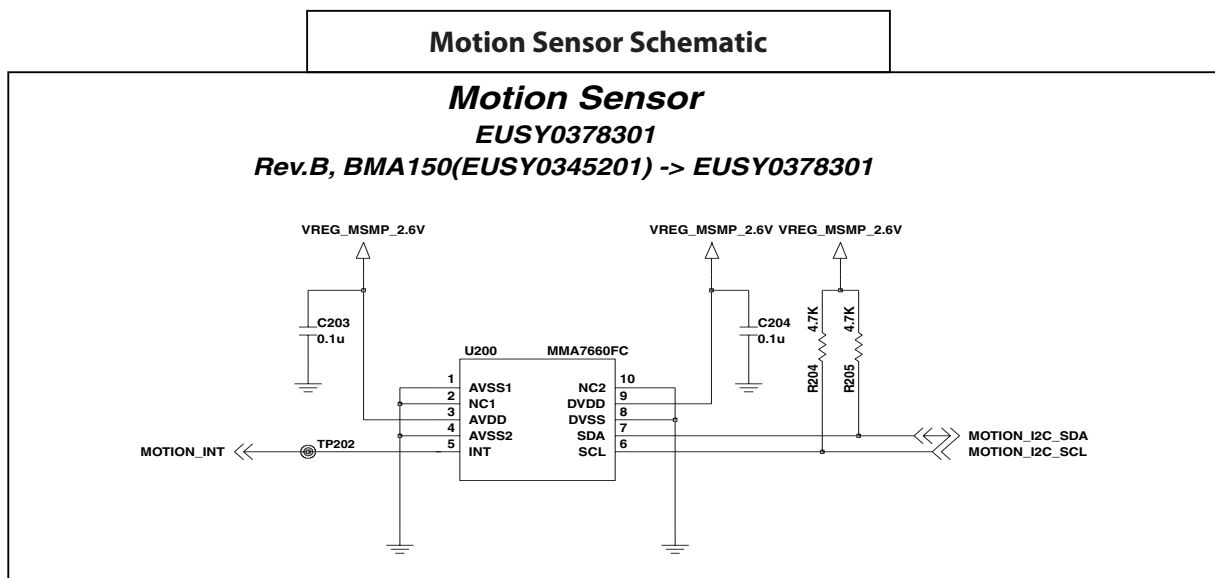
Luminance Sensor Block Diagram



### 3.18 Motion Sensor

According to tilt the cell phone, the screen is had rotated automatically.

U200 :MMA7660FC IC used I2C interface to MSM7200A

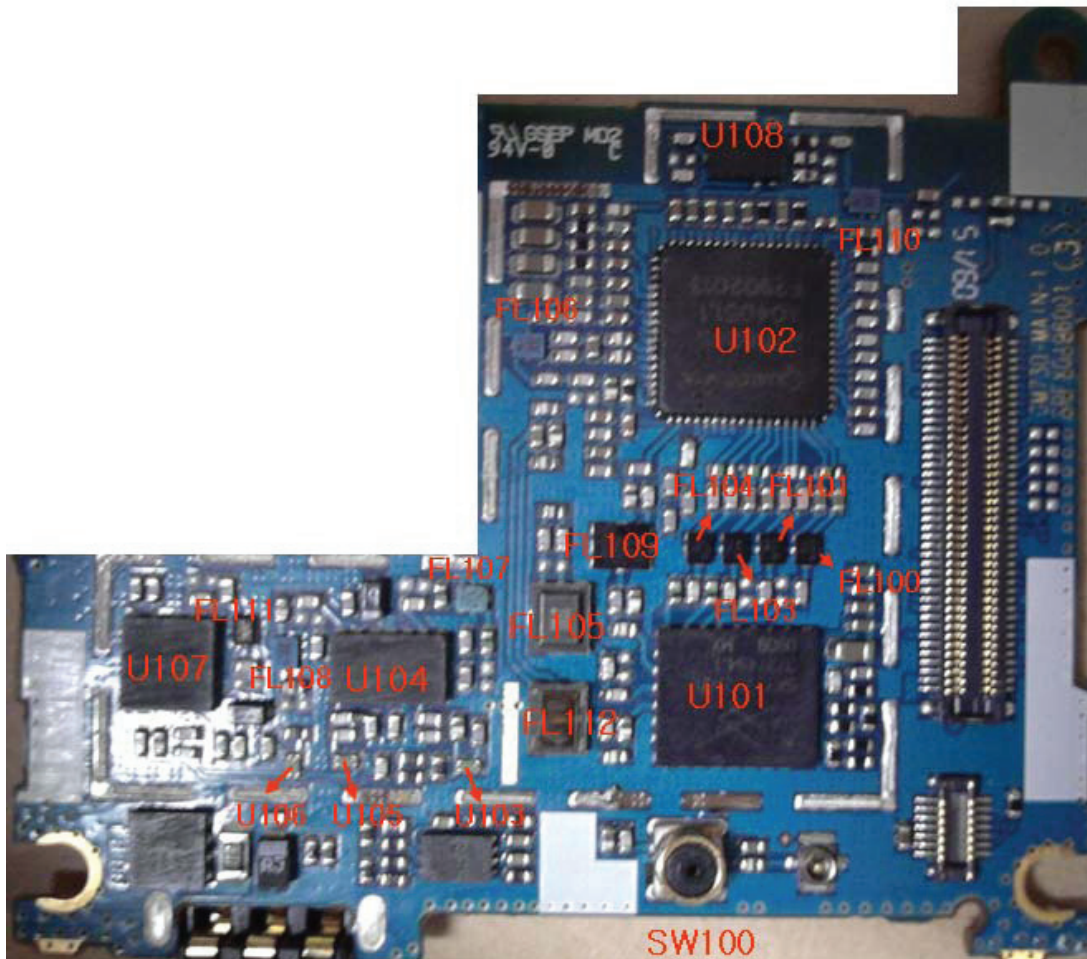


## 4. TROUBLE SHOOTING

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## 4. TROUBLE SHOOTING

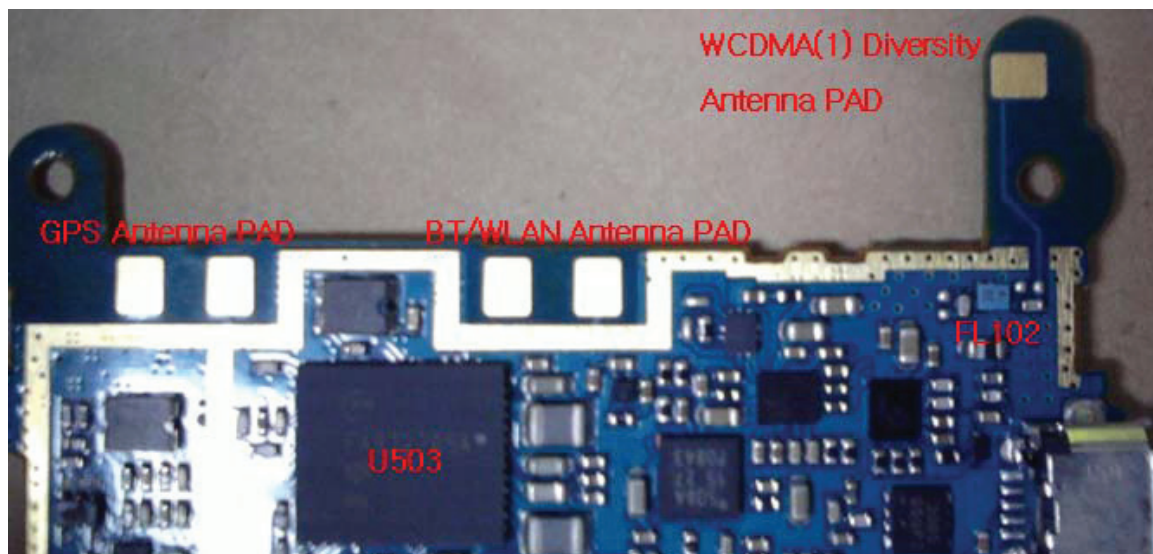
### 4.1 RF Component



## 4. TROUBLE SHOOTING

### RF component (WCDMA / GSM)

Reference	Description	Reference	Description
U102	RTR6285(Transceiver)	FL107	WCDMA (VIII) TX SAW
U101	FEM & GSM PAM	FL105	WCDMA (VIII) Duplexer
U104	WCDMA Dual (I,VIII) PAM	FL112	WCDMA (II) Duplexer
U107	WCDMA (II) PAM	FL109	WCDMA (I) Duplexer
FL111	WCDMA (II) TX SAW Filter	FL106	WCDMA (I) RX SAW Filter
FL108	WCDMA (I) TX SAW Filter	U108	GPS LNA
U106	WCDMA (II) Coupler	FL110	GPS SAW Filter
FL101	EGSM Rx SAW Filter	FL100	GSM850 Rx SAW Filter
U105	WCDMA (I) Coupler	FL104	PCS Rx SAW Filter
U103	WCDMA (VIII) Coupler	FL103	DCS Rx SAW Filter



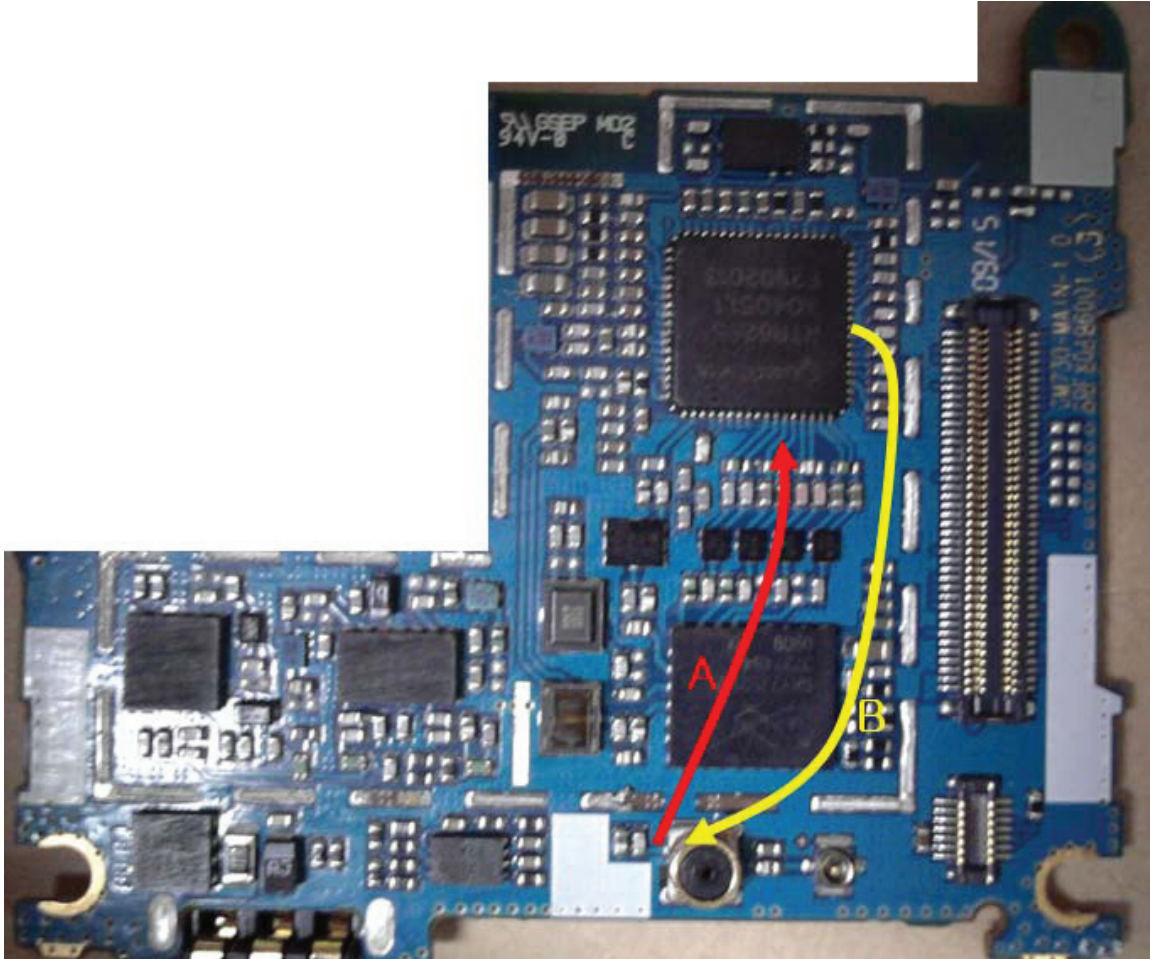
### RF component (BT/WLAN MODULE, WCDMA(I) Diversity, Antenna PAD)

Reference	Description
U503	BT/WLAN Module
FL102	WCDMA (I) Diversity RX Filter

## 4. TROUBLE SHOOTING

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### 4.2 SIGNAL PATH

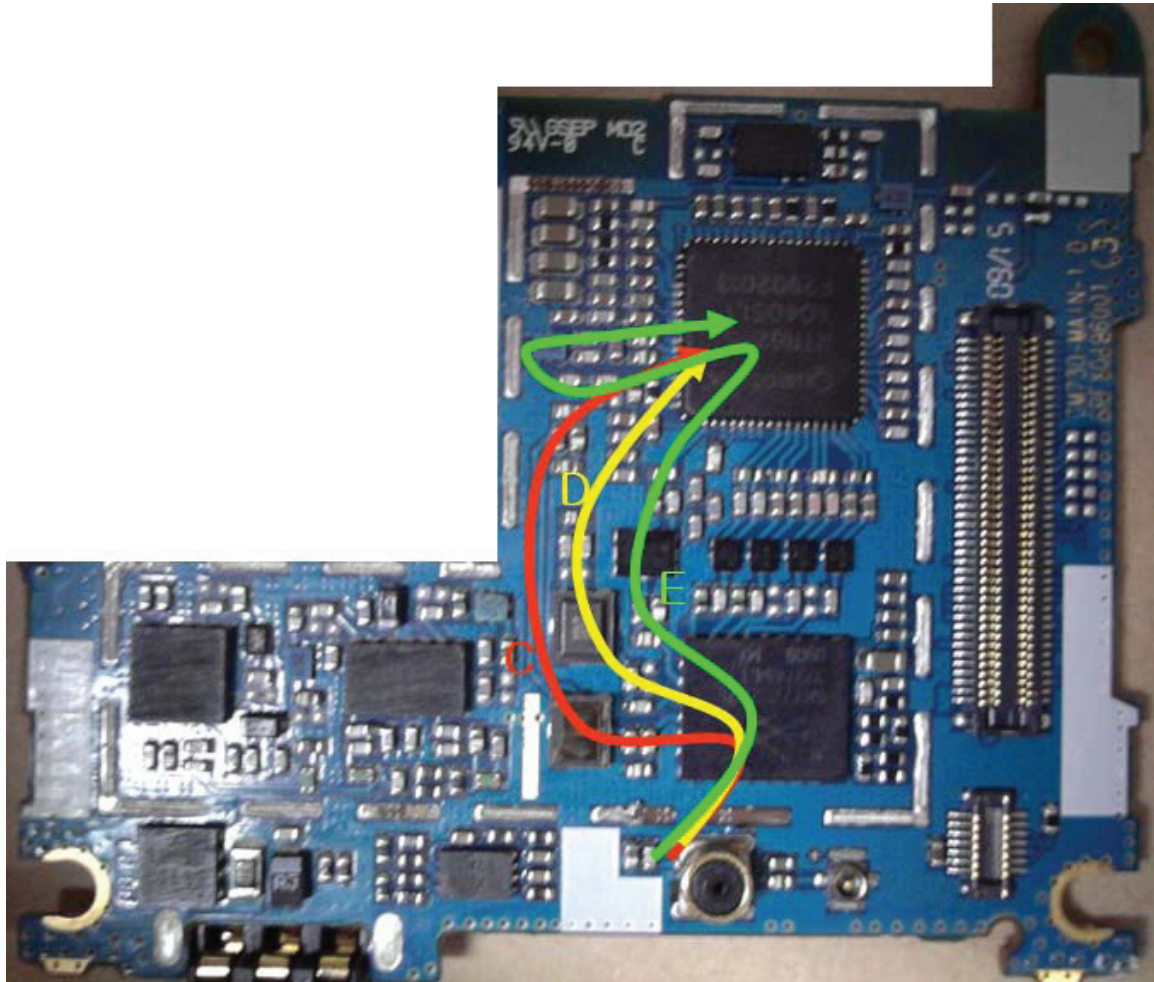


#### **GSM850/GSM900/DCS/PCS's RX/TX Signal PATH**

**A. GSM850/GSM900/DCS1800/PCS1900 RX PATH**

**B. GSM850/GSM900/DCS1800/PCS1900 TX PATH**





### WCDMA I,II and VIII Band RX Signal PATH

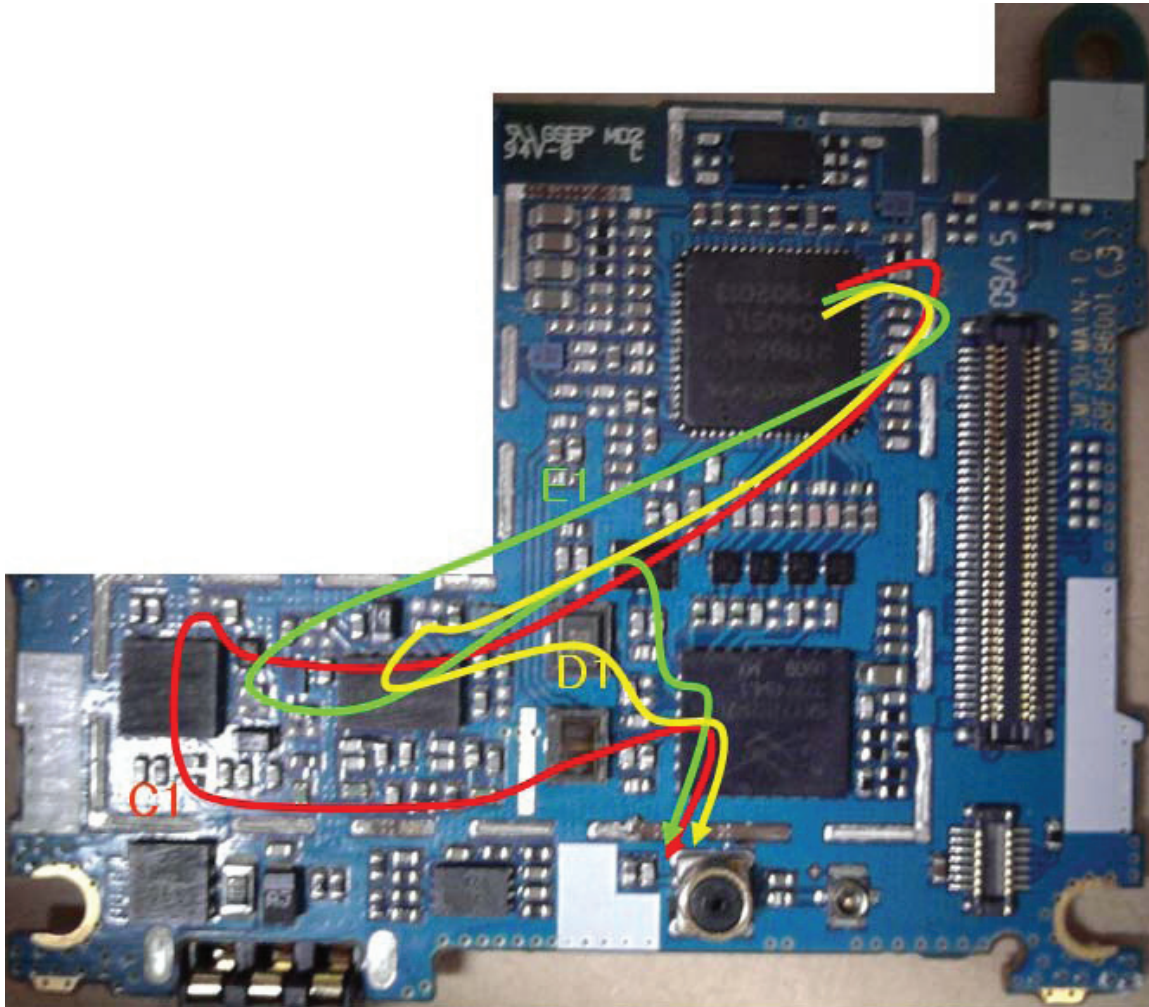
**C. WCDMA 1900 RX PATH**

**D. WCDMA 900 RX PATH**

**E. WCDMA 2100 RX PATH**

## 4. TROUBLE SHOOTING

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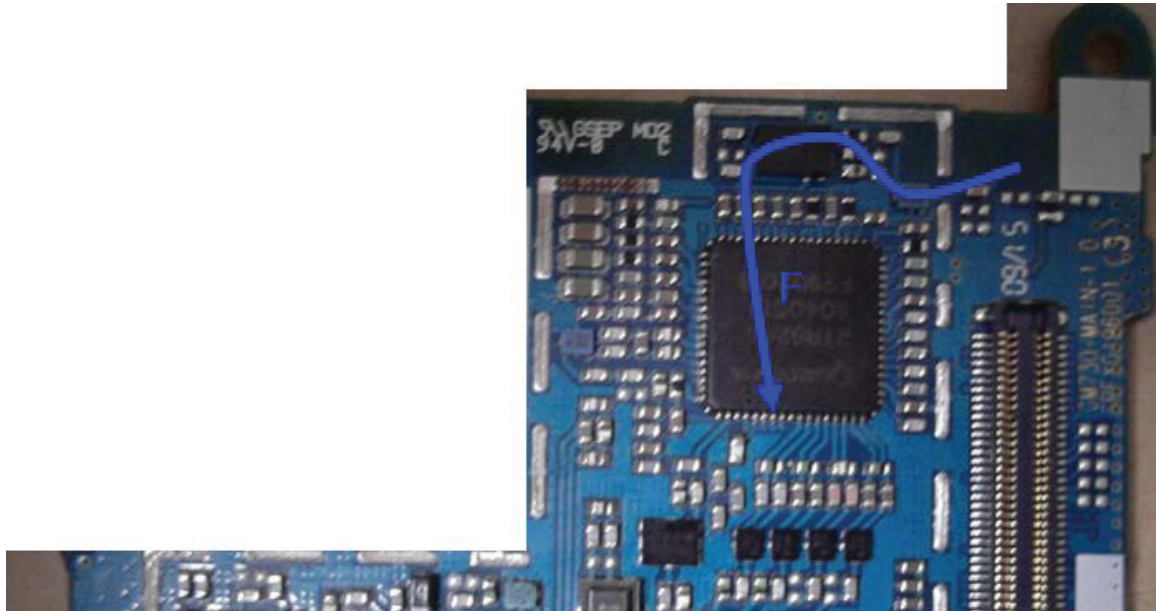


### WCDMA I,II and VIII Band TX Signal PATH

**C1. WCDMA 1900 TX PATH**

**D1. WCDMA 900 TX PATH**

**E1. WCDMA 2100 TX PATH**



### GPS Signal PATH

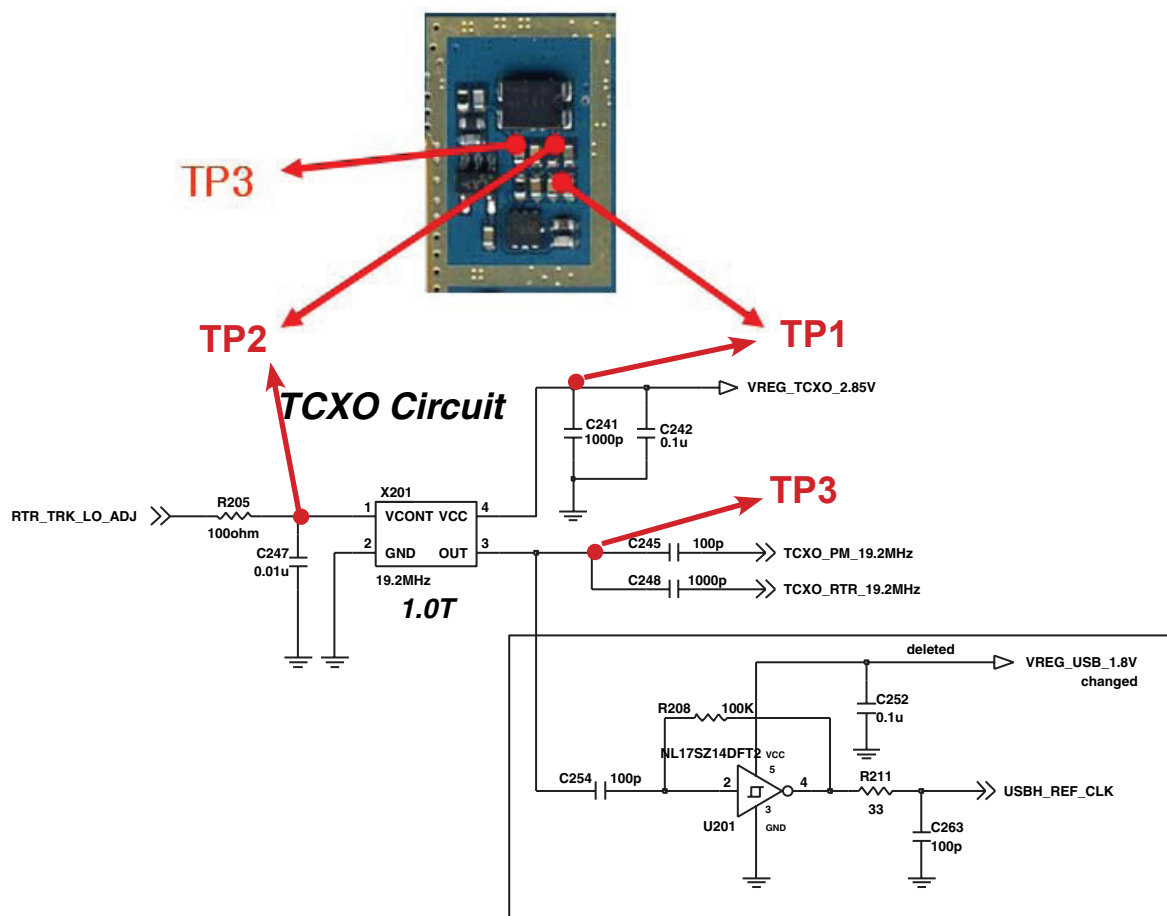
#### F. GPS Rx PATH



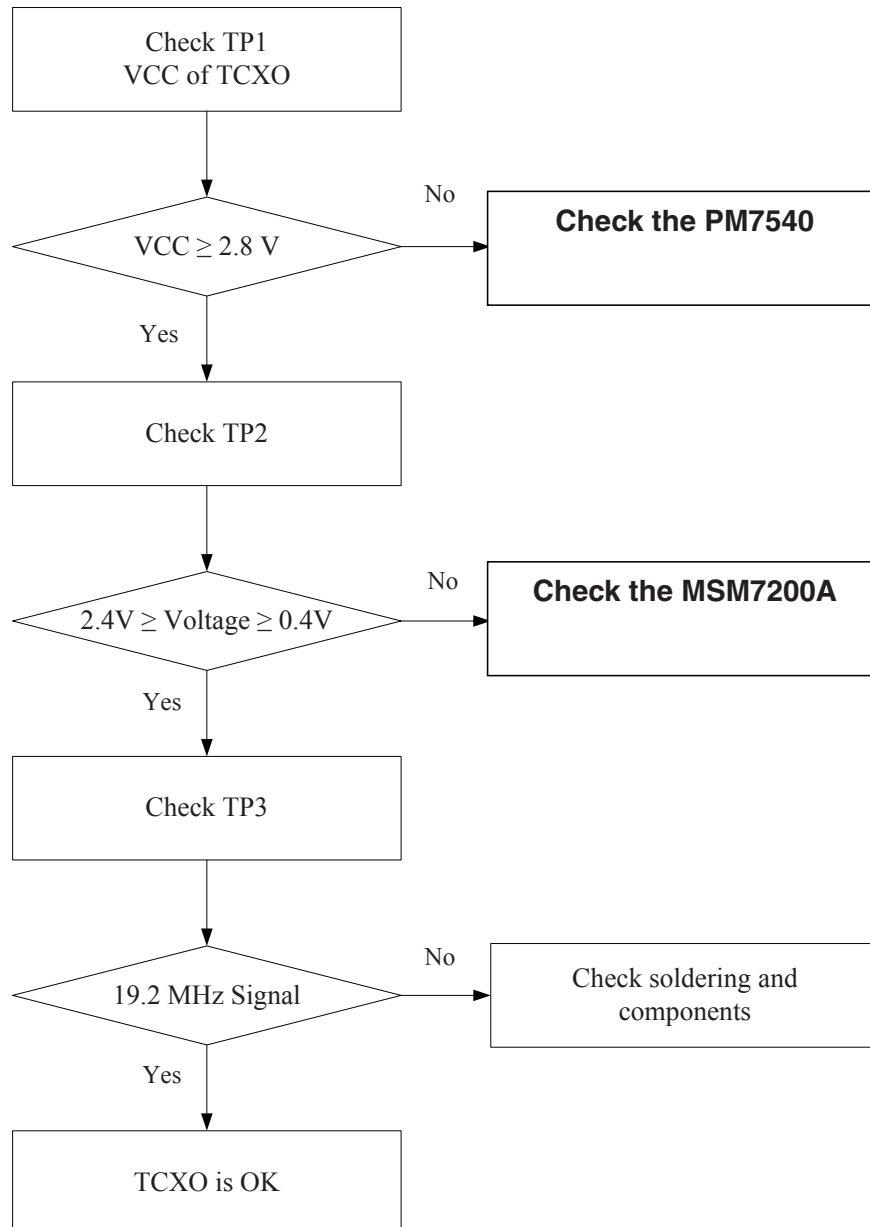
## 4. TROUBLE SHOOTING

### 4.3 Checking TCXO Block

The output frequency (19.2MHz) of TCXO (X101) is used as the reference one of RTR6285 and PM7540 internal VCO.



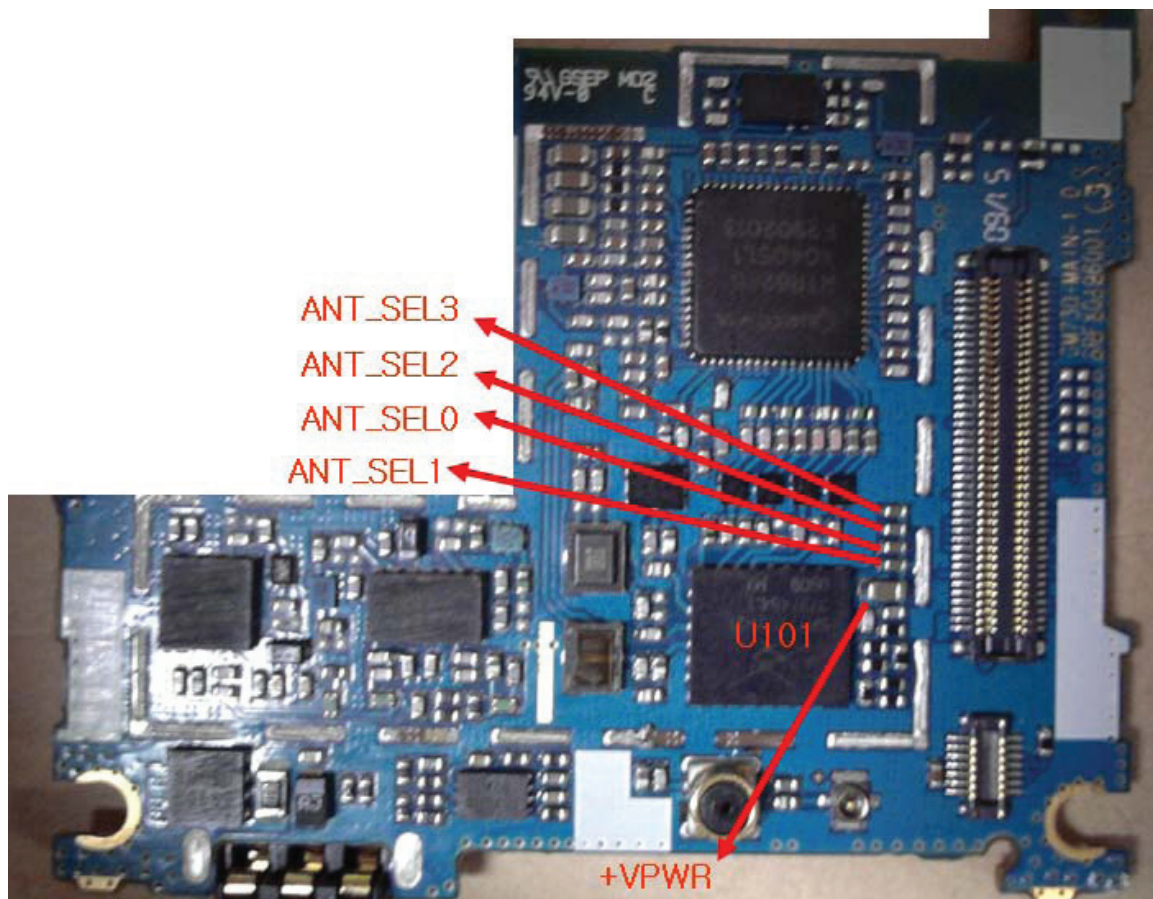
Schematic of the Crystal Part (19.2MHz)



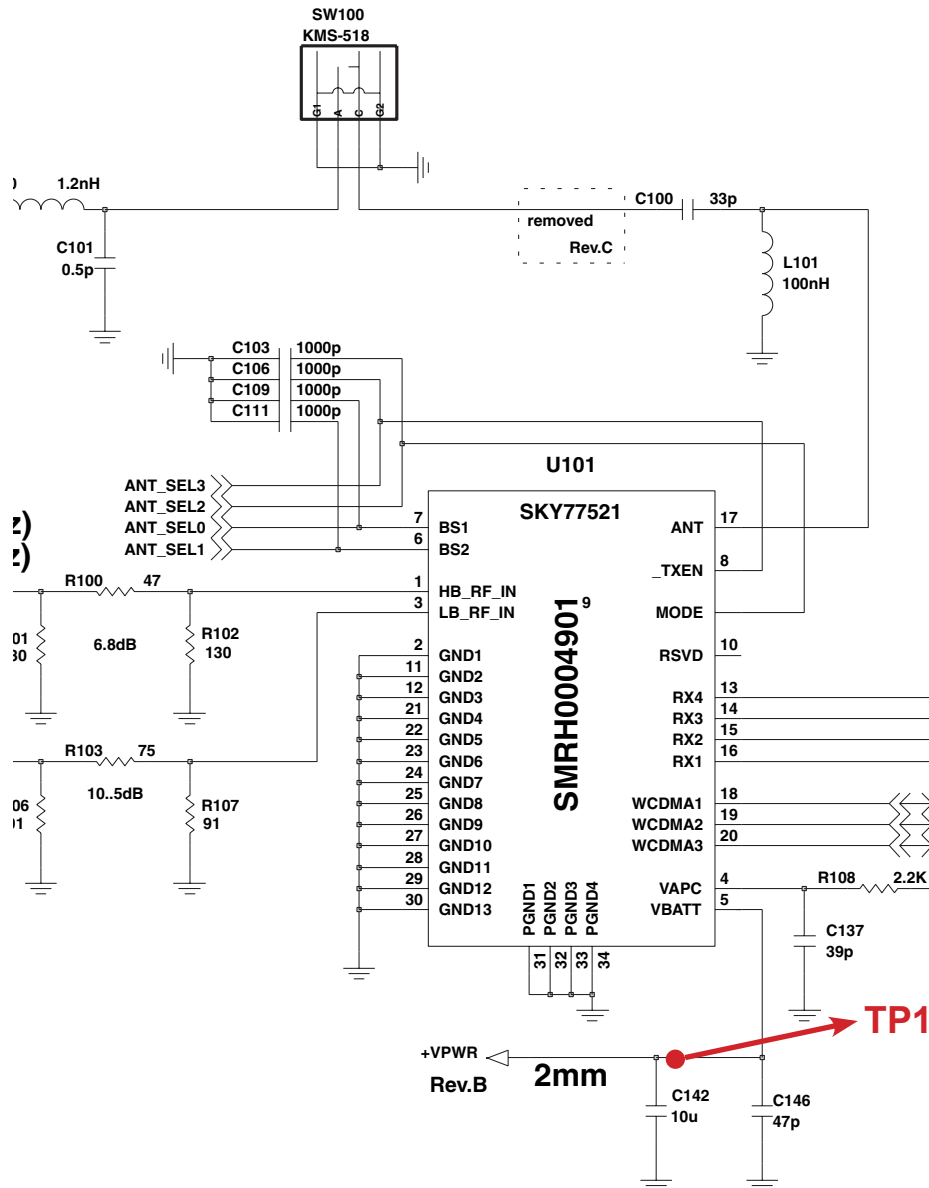
## 4. TROUBLE SHOOTING

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### 4.4 Checking Front End Module(FEM) Block



## 4. TROUBLE SHOOTING



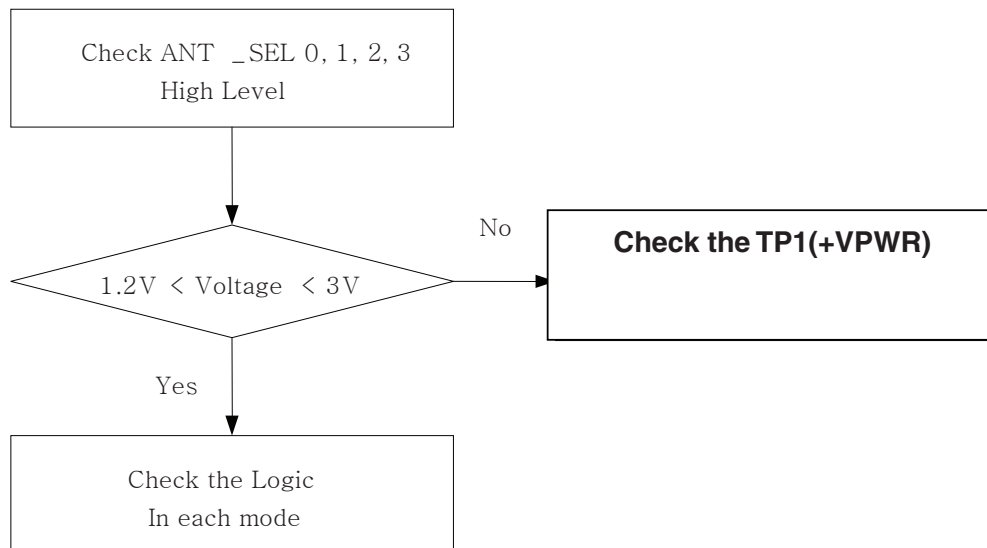
**Schematic of the Antenna Switch Block**

## 4. TROUBLE SHOOTING

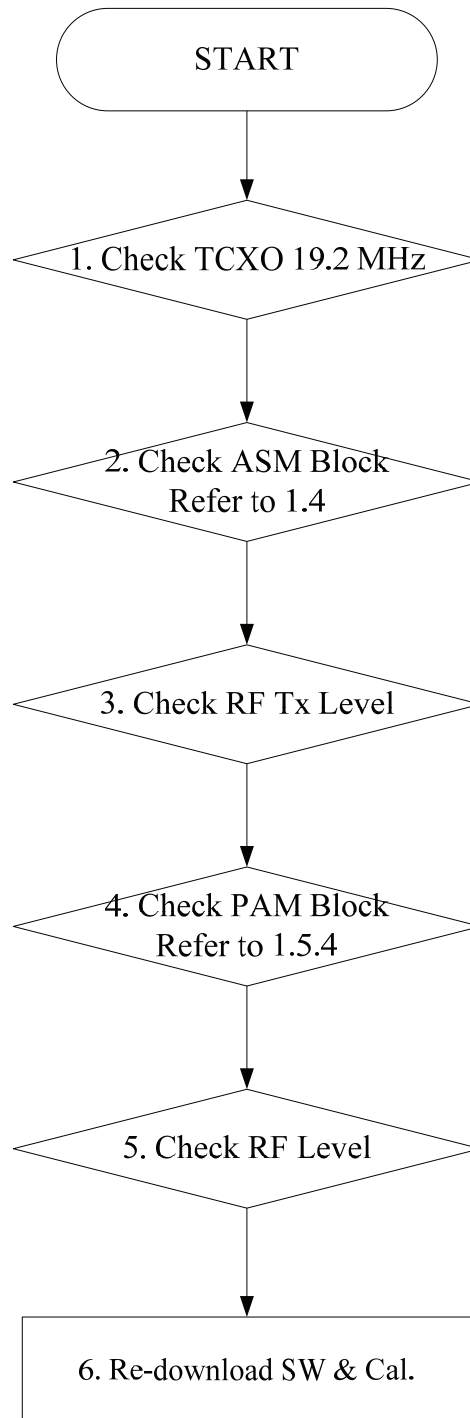
### ANTENNA SWITCH MODULE LOGIC(SKY77521)

BAND	ANT_SEL0	ANT_SEL1	ANT_SEL2	ANT_SEL3
GSM850/EGSM TX	LOW	HIGH	LOW	LOW
PCN/PCS TX	HIGH	HIGH	LOW	LOW
WB 850/900	LOW	LOW	HIGH	LOW
WB 1900	HIGH	LOW	HIGH	LOW
WB 2100	HIGH	LOW	LOW	LOW
GSM850 RX	HIGH	LOW	LOW(X)	HIGH
EGSM RX	HIGH	HIGH	LOW(X)	HIGH
DCN RX	LOW	HIGH	LOW(X)	HIGH
PCS RX	LOW	LOW	LOW(X)	HIGH

#### Checking Switch Block Power Source



### 4.5 Checking WCDMA Block



## 4. TROUBLE SHOOTING

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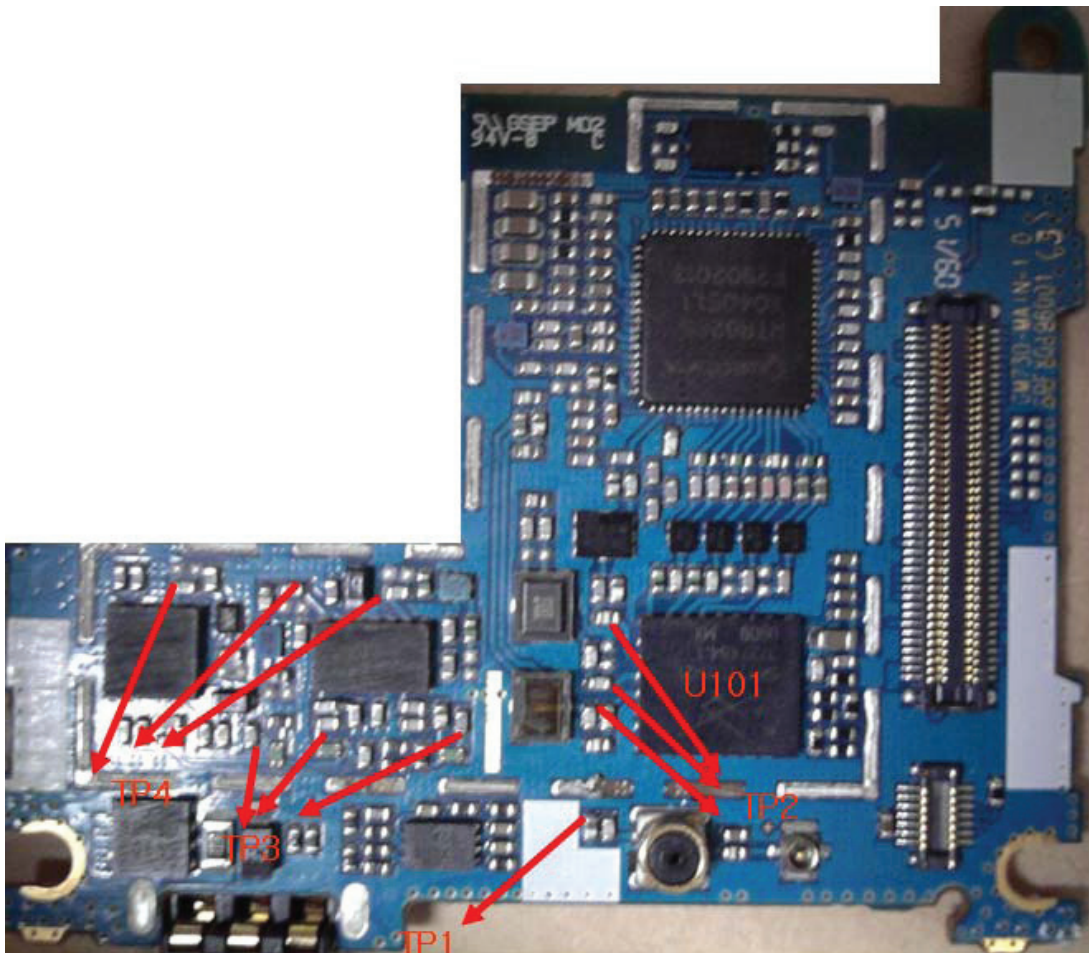
### 4.5.1 Checking TCXO Block

Refer to 4.3

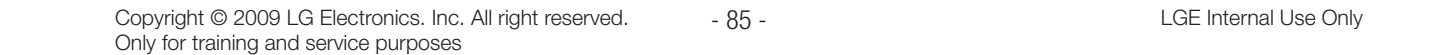
### 4.5.2. Checking ASM(FEM) Block

Refer to 4.4

### 4.5.3. Checking RF TX Level



Test Point (TX Level)

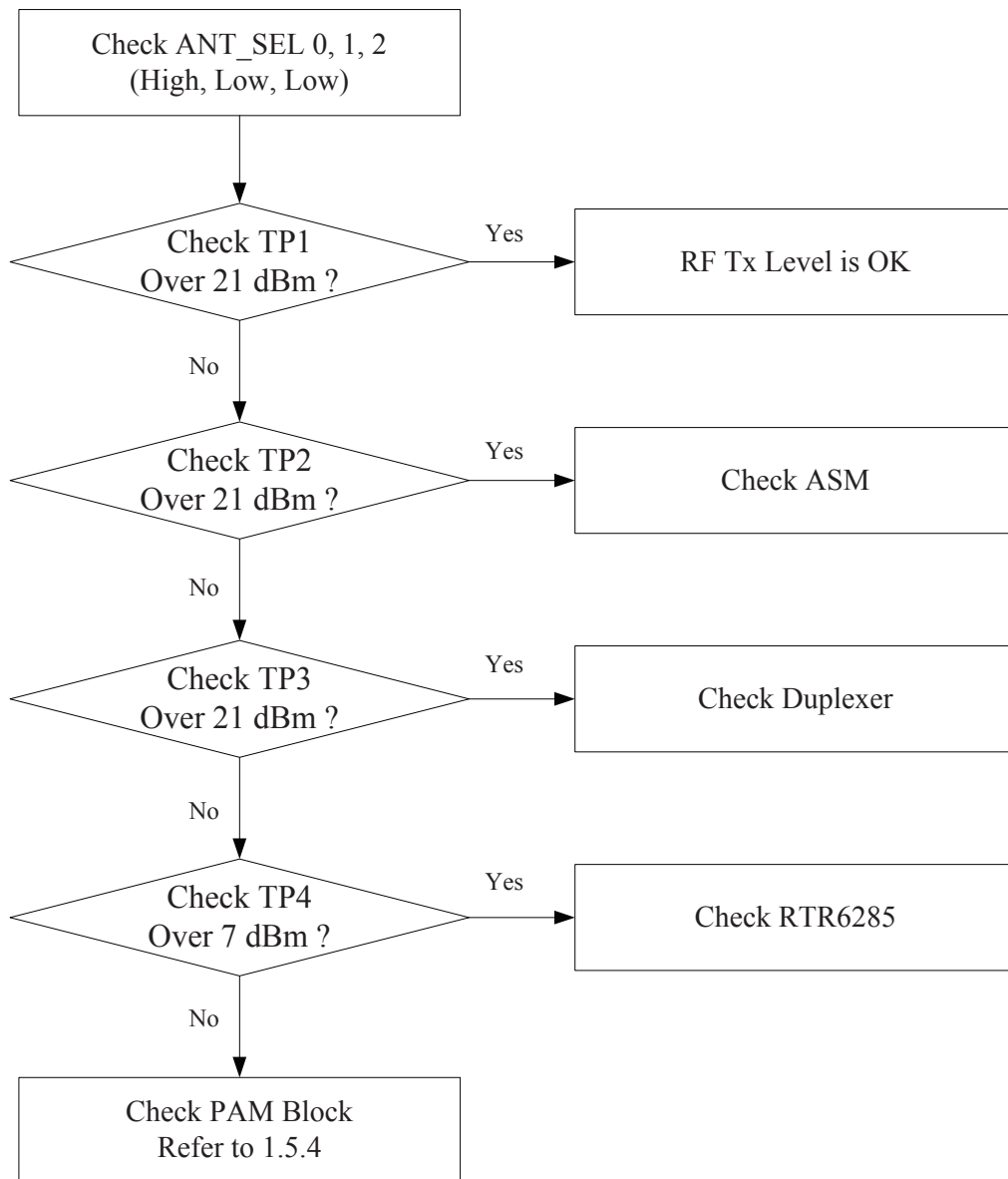




## 4. TROUBLE SHOOTING

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**For testing, Max power output is needed.**



RTR6285 Maximum output Power = 7 dBm  
RTR6285 minimum output Power = -80 dBm  
PAM(ACPM-7381) = Maximum input Power = 10 dBm

### 4.5.4. Checking PAM Block

#### PAM control signal

**PA\_ON(WCDMA\_900\_ON(C182), WCDMA\_1900\_ON(C222) and  
WCDMA\_2100\_ON(C193) : PAM Enable**

**PA\_RO: PAM Gain Control**

**PA\_ON must be HIGH (over 2.6V)**

## 4. TROUBLE SHOOTING

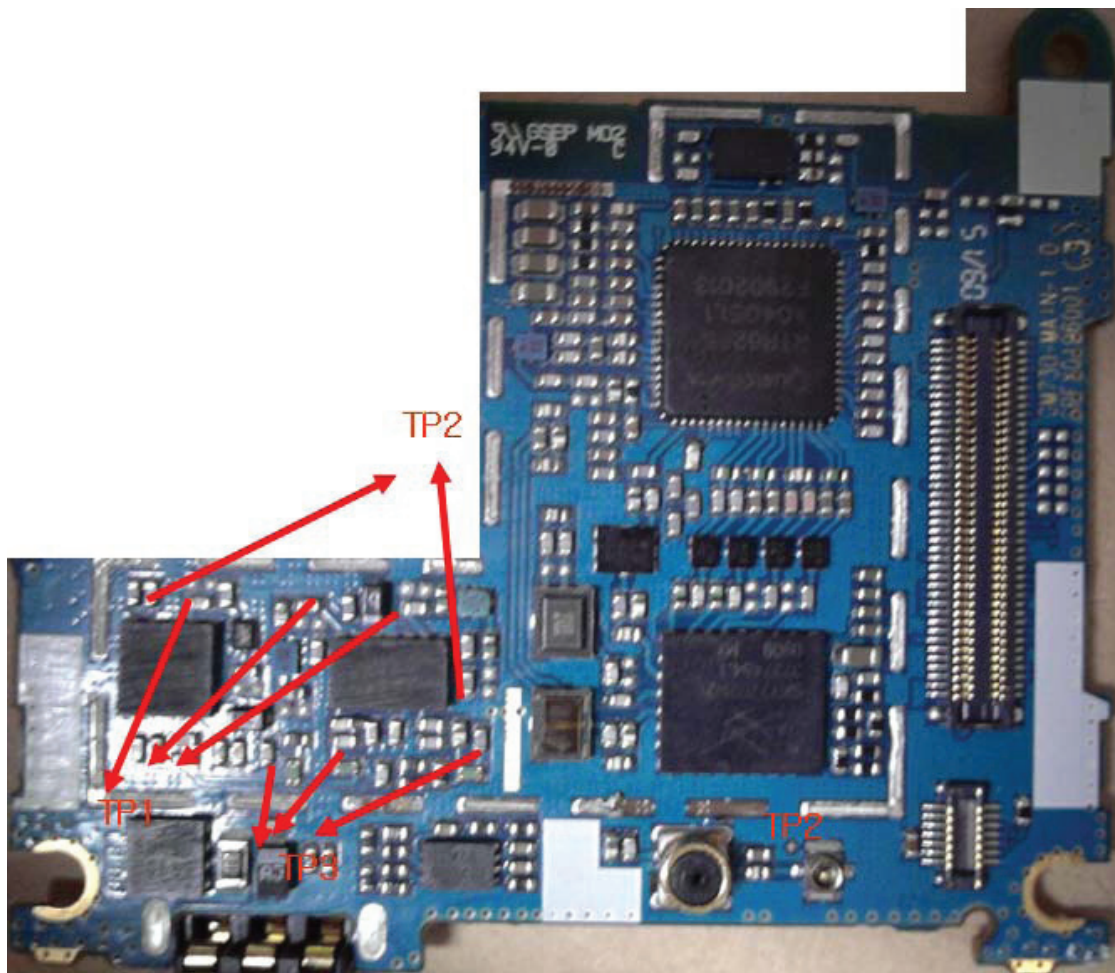
---

### PAM IN/OUT Signal :

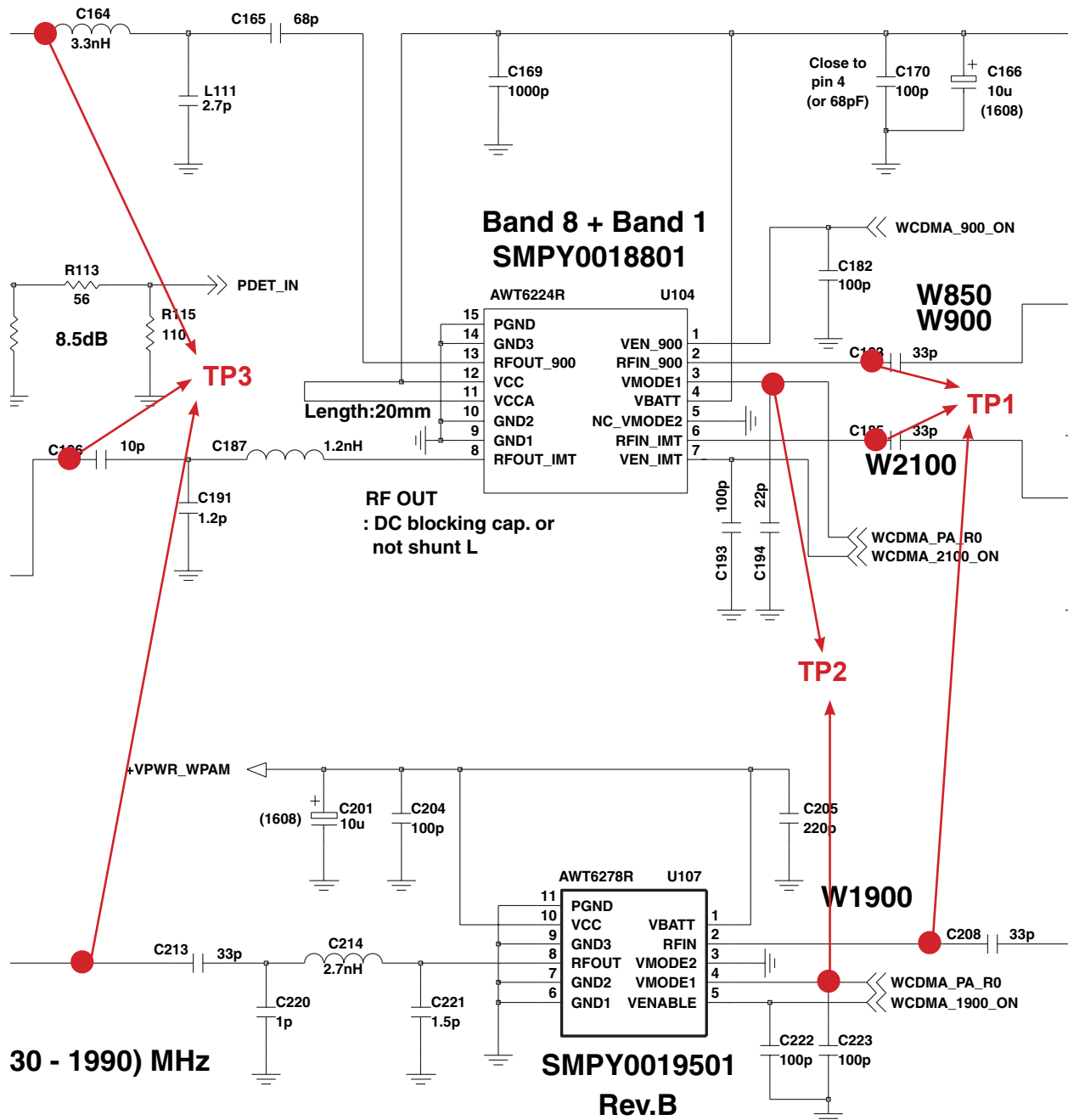
When PAM is under the operation of high power mode (**PA\_R0(C194,C223):Low**),

**PAM OUT power must be over 21 dBm**

**PAM IN power must be under 10 dBm**

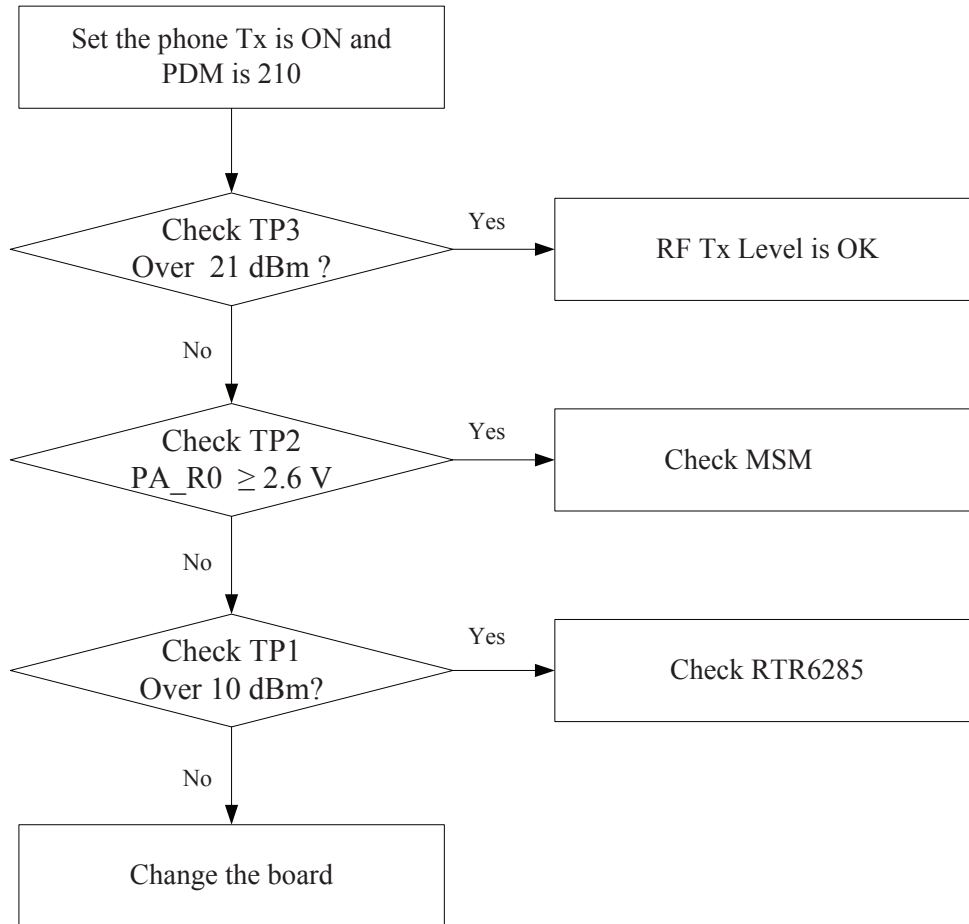


## 4. TROUBLE SHOOTING

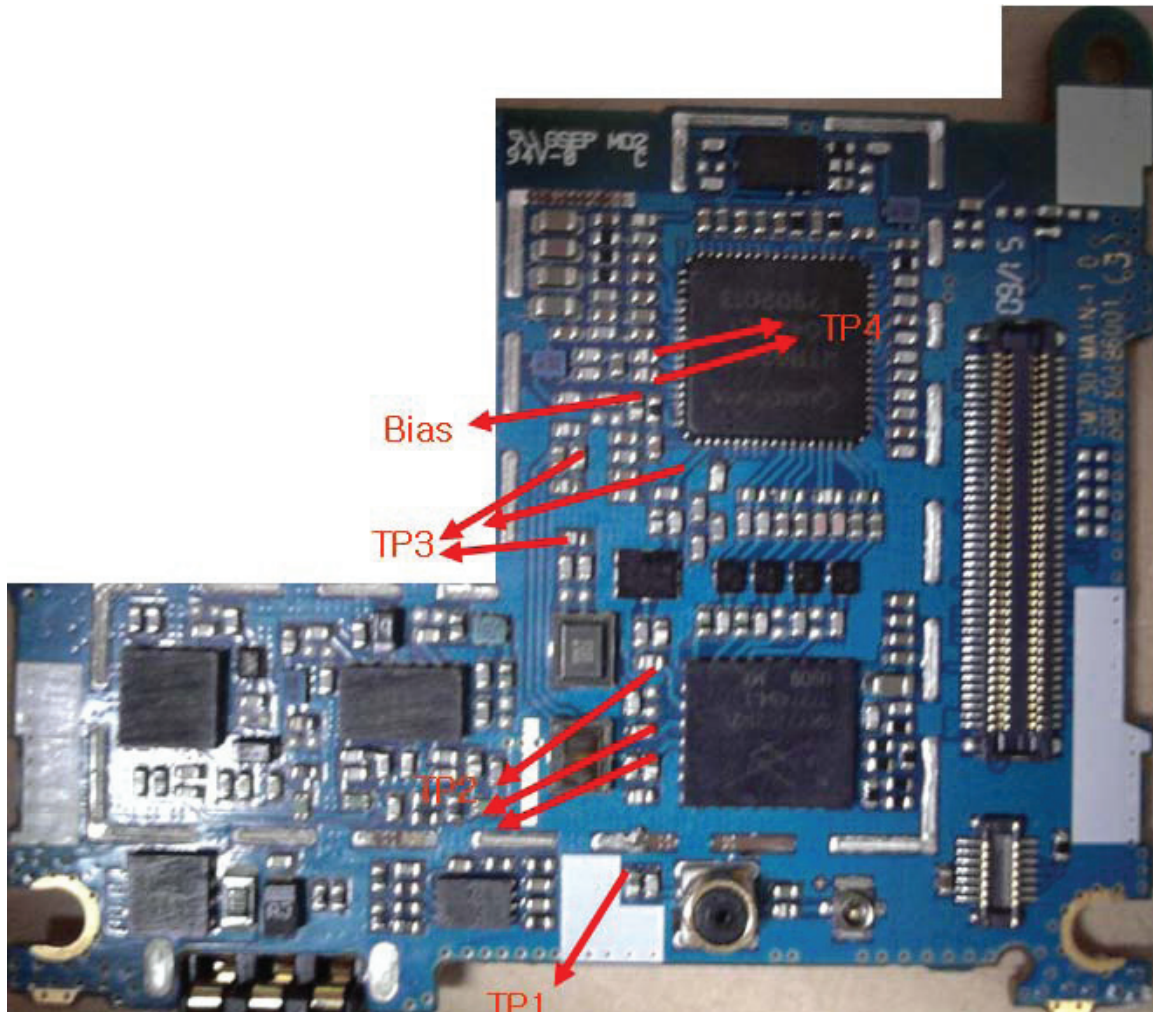


## 4. TROUBLE SHOOTING

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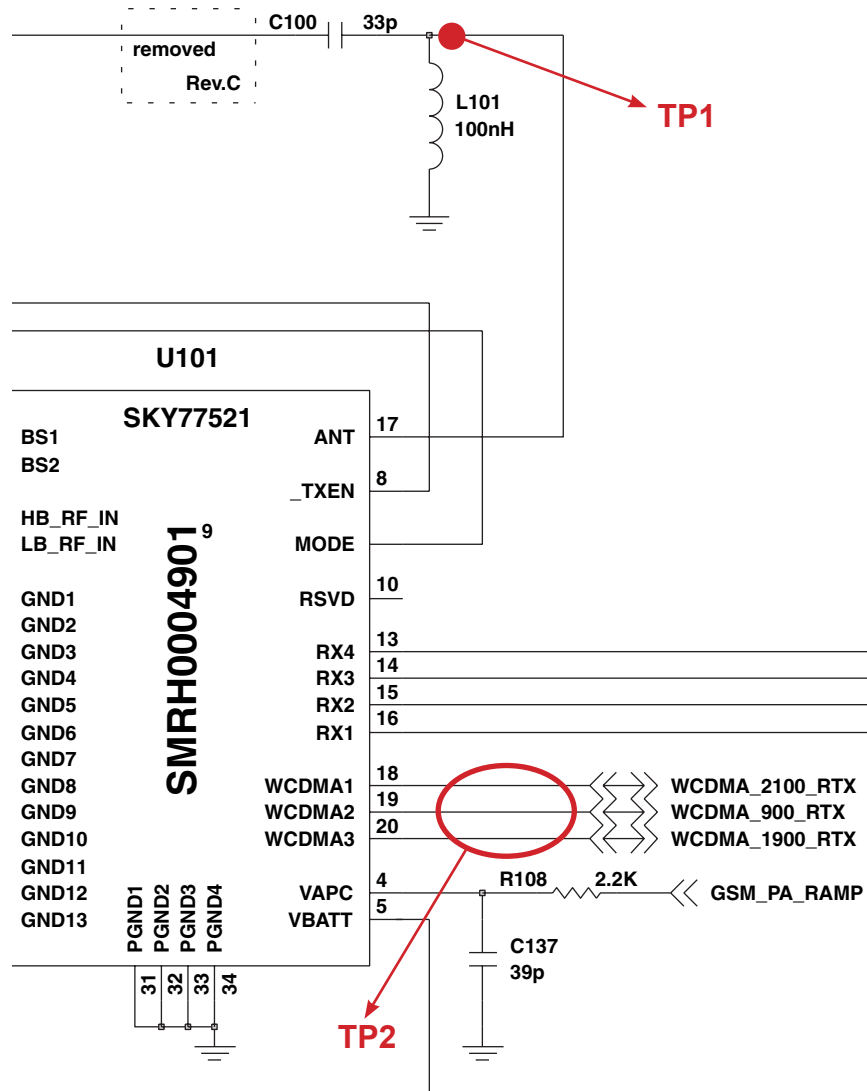


### 4.5.5. Checking RF Rx Level

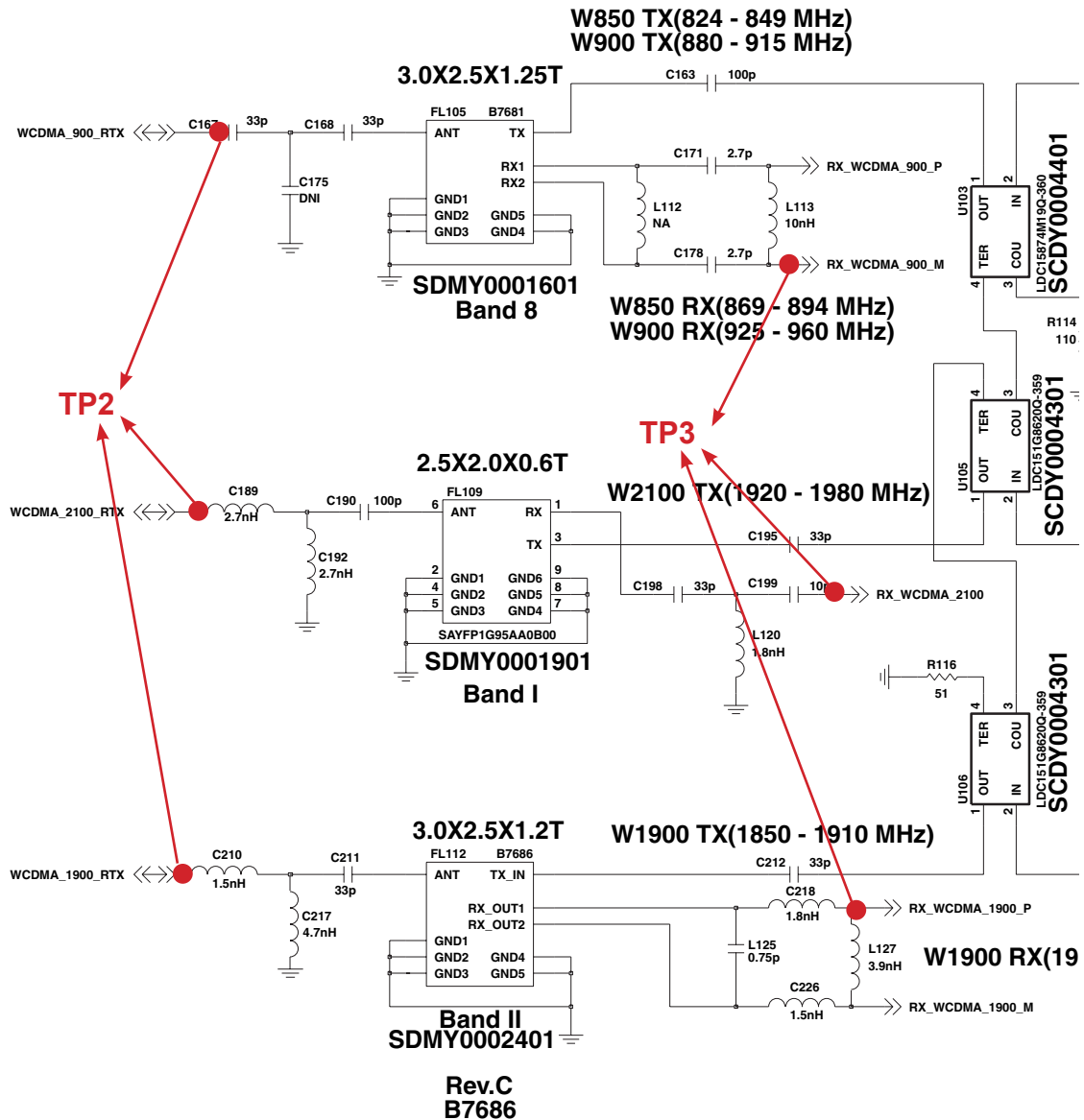


**Test Point (RF Rx Level)**

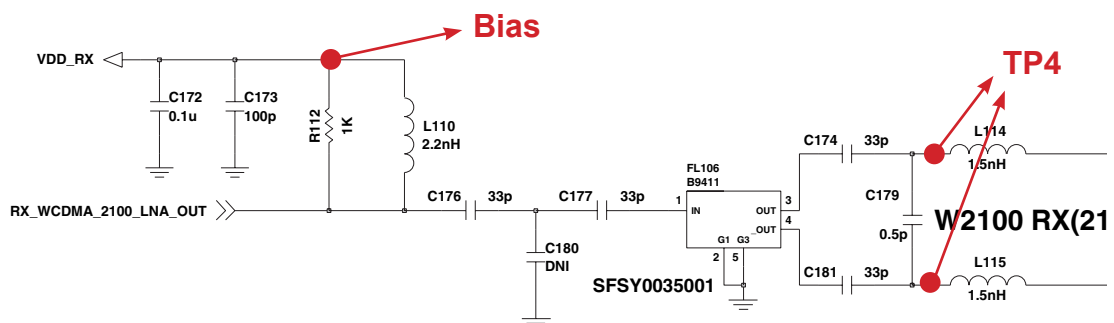
## 4. TROUBLE SHOOTING



## 4. TROUBLE SHOOTING



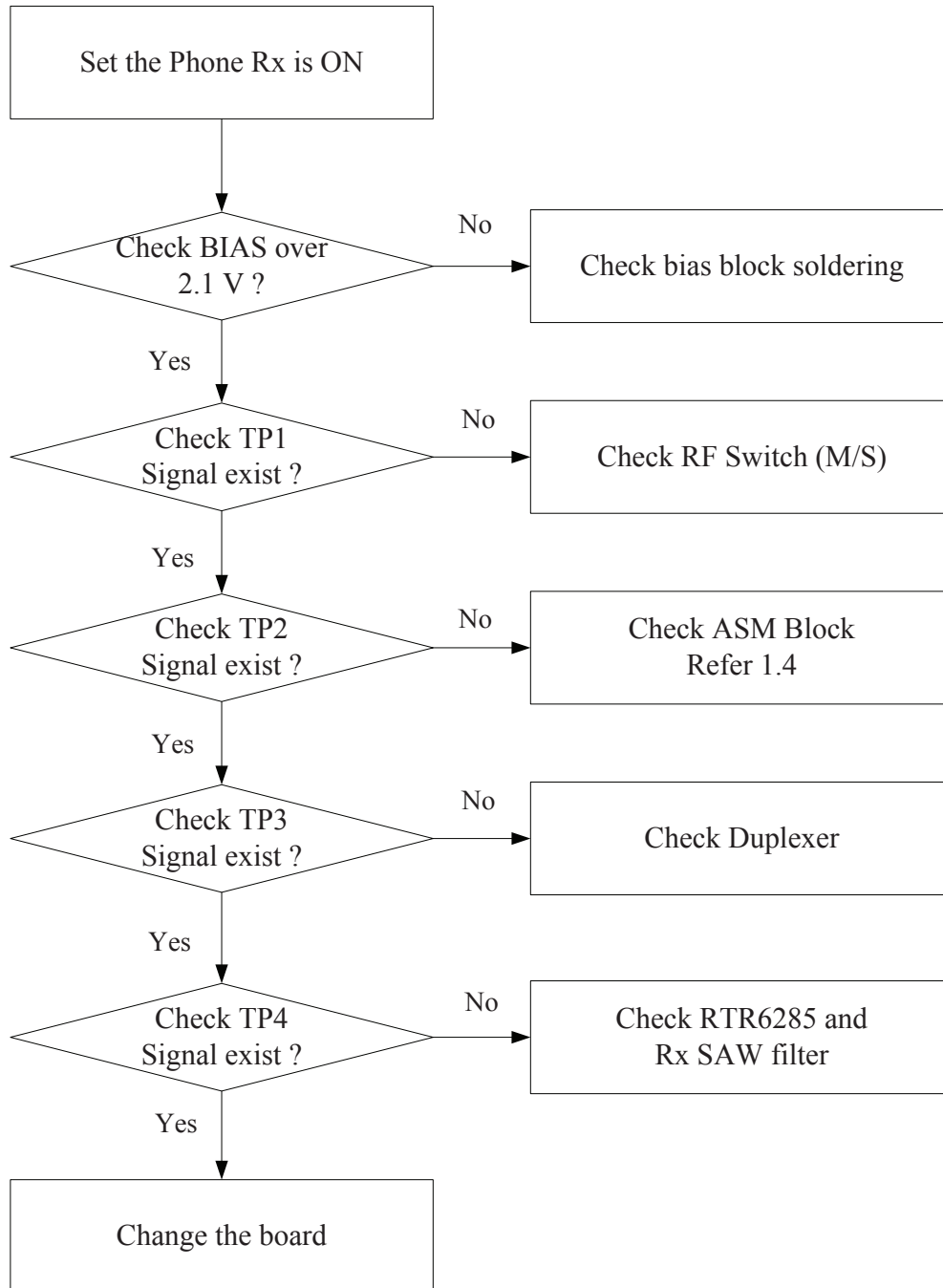
### WCDMA RX 2100 LNA Circuit



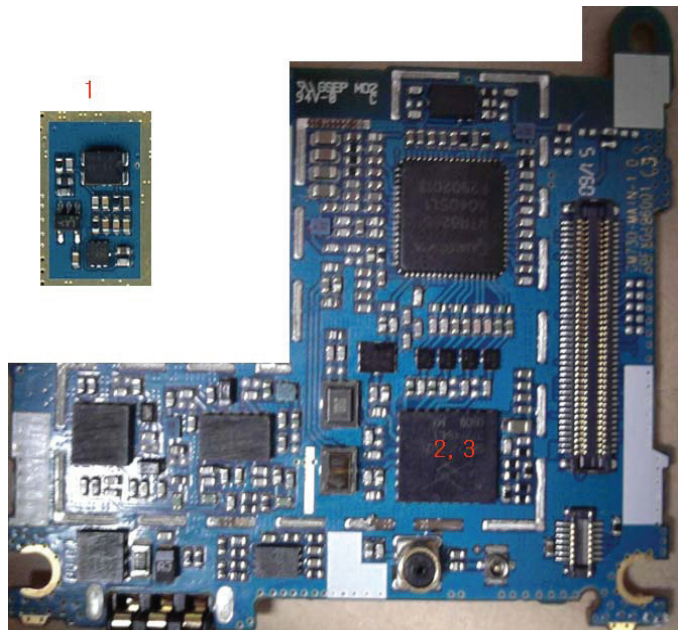
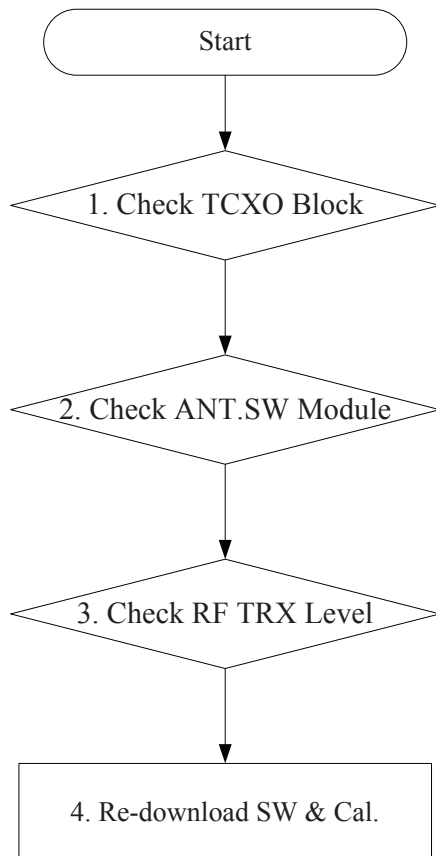


## 4. TROUBLE SHOOTING

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### 4.6 Checking GSM Block



## 4. TROUBLE SHOOTING

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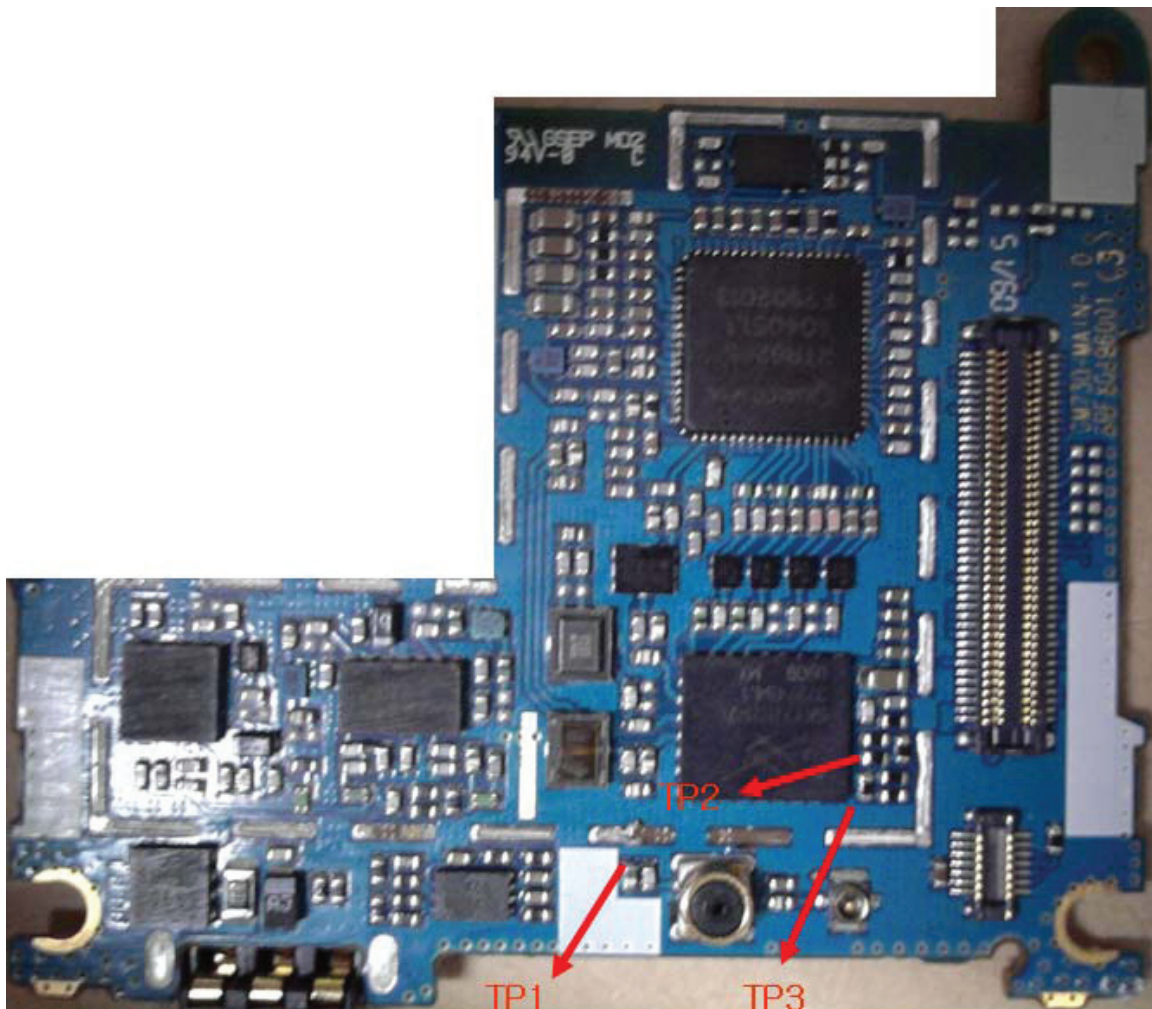
### 4.6.1. Checking TCXO Block

Refer to 4.3

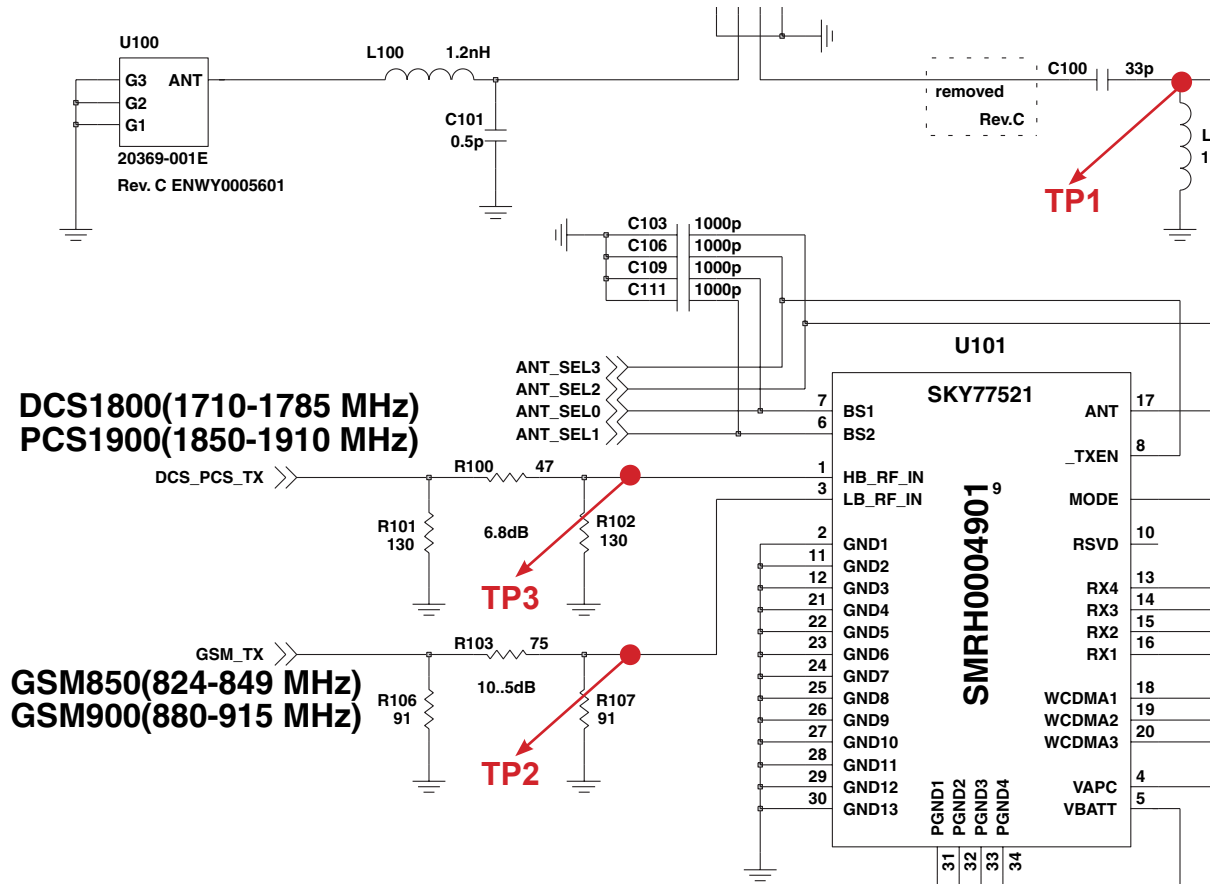
### 4.6.2. Checking FEM Block

Refer to 4.4

#### 4.6.3.1. Checking RF TX level



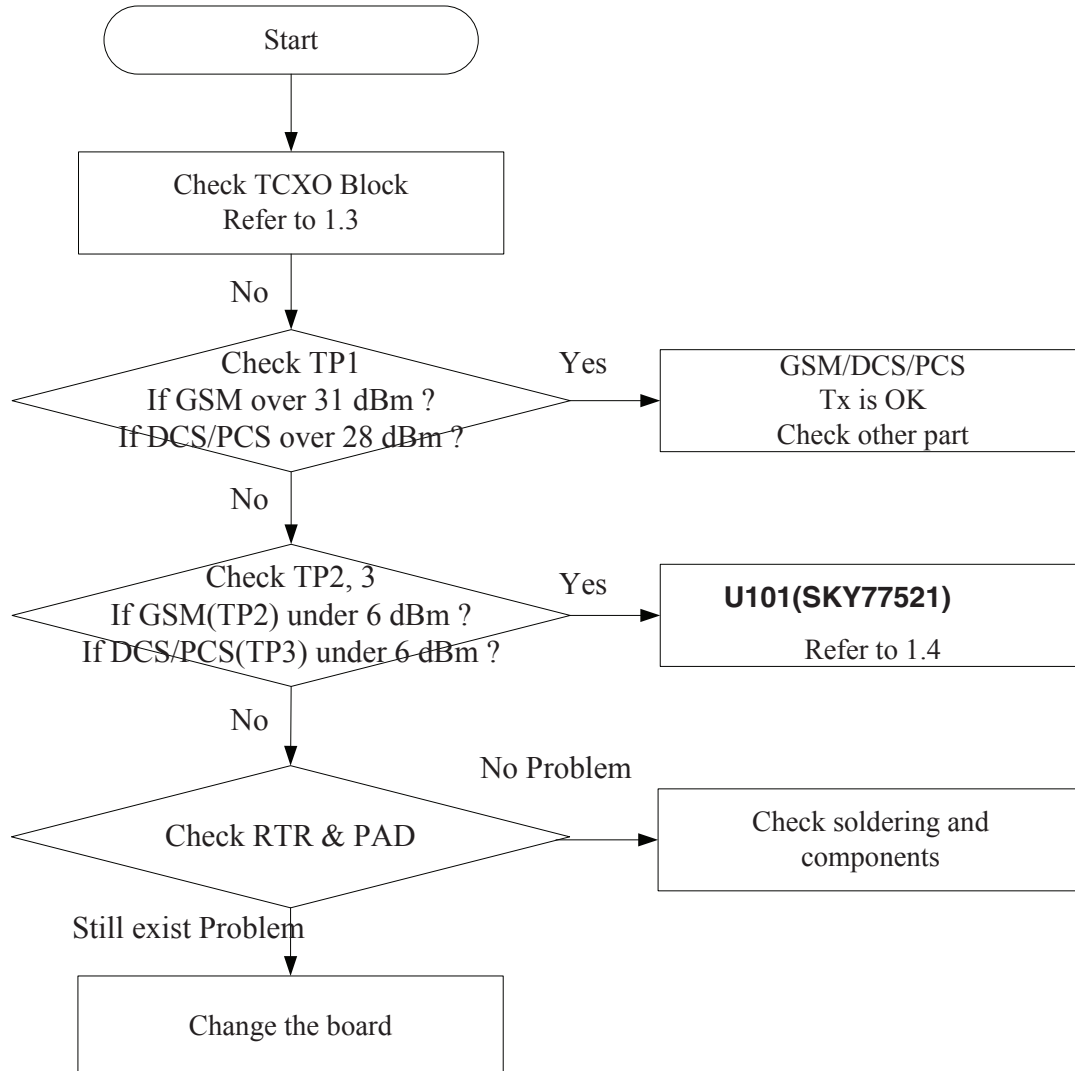
## 4. TROUBLE SHOOTING



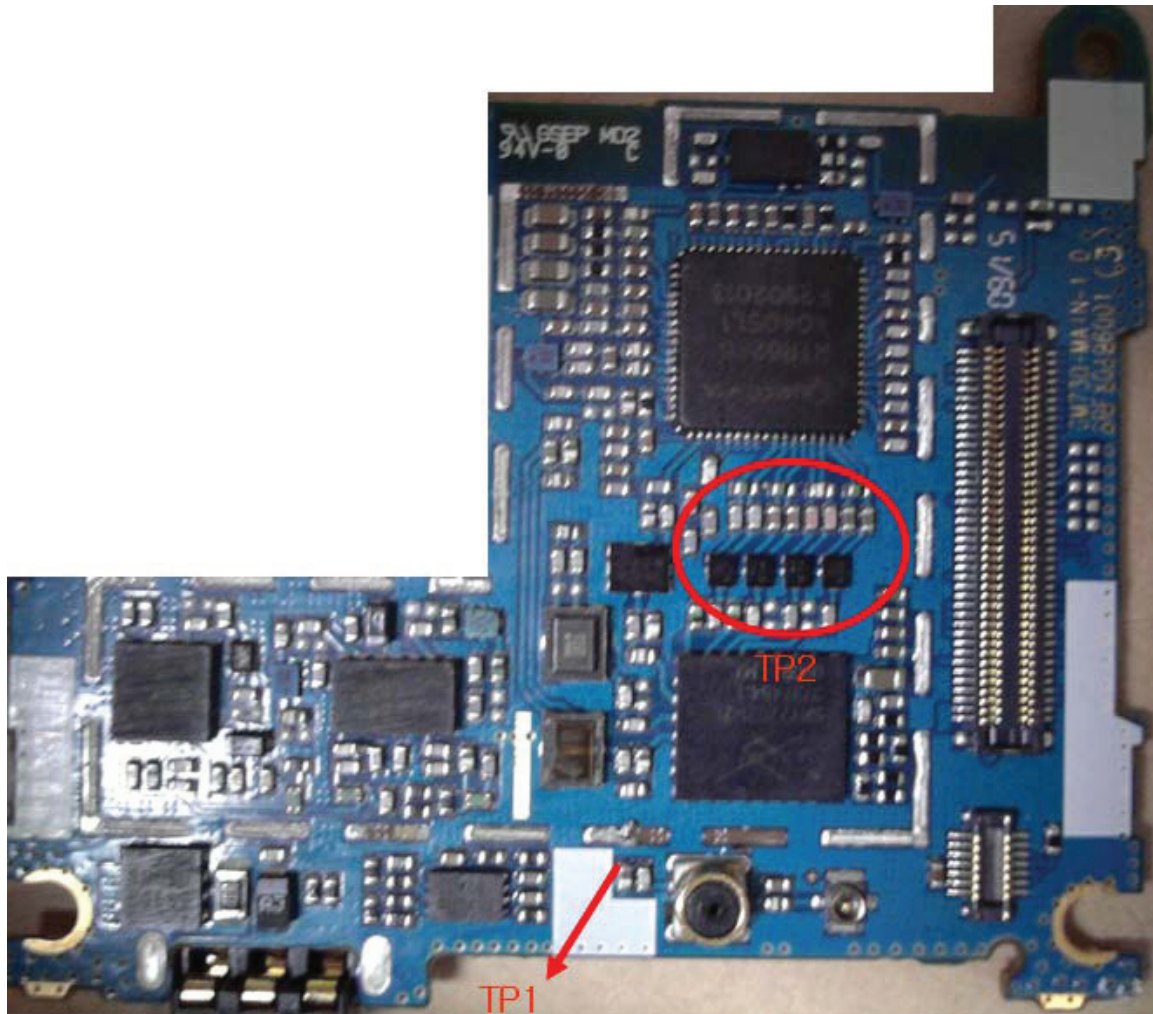
**Schematic of GSM/DCS/PCS Tx Block**

## 4. TROUBLE SHOOTING

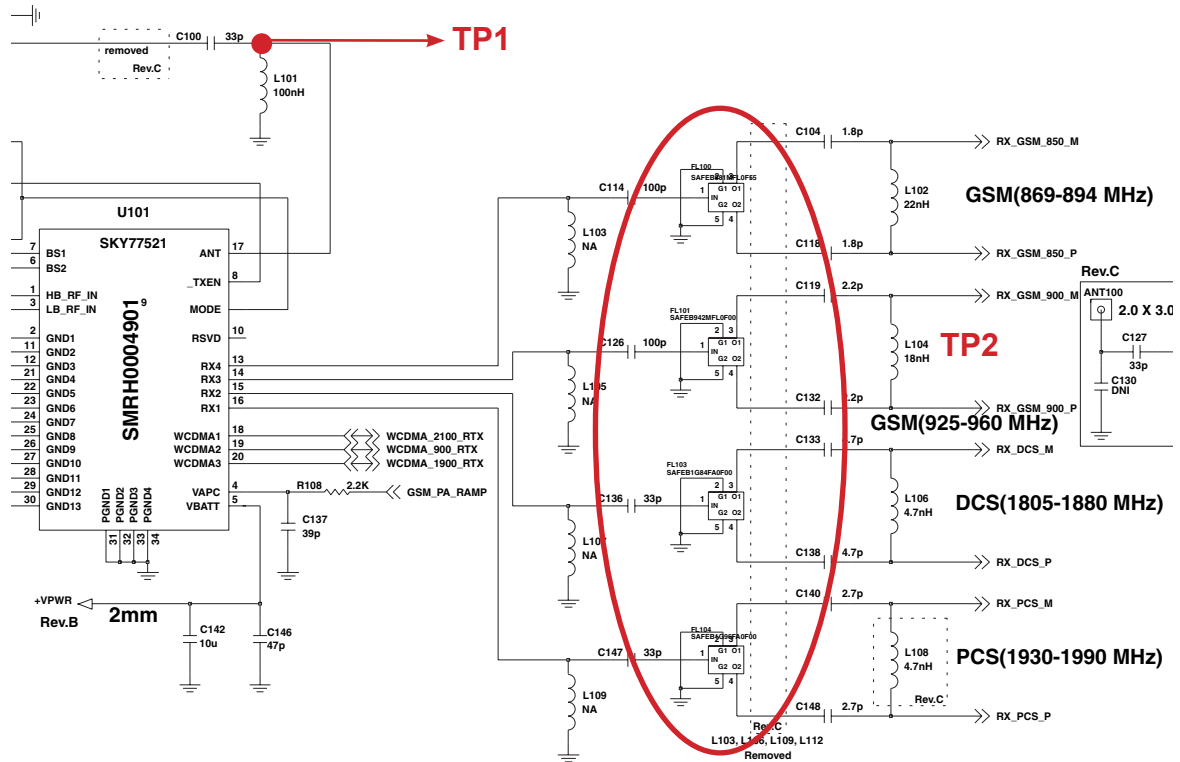
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### 4.6.3.2. Checking RF Rx Block

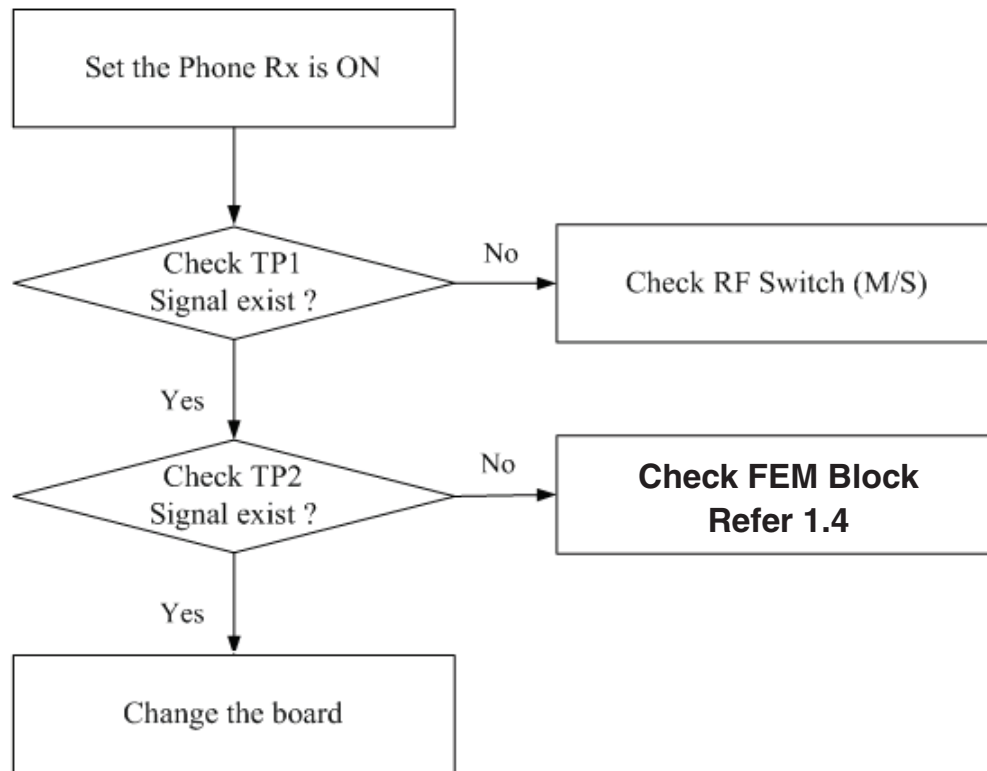


## 4. TROUBLE SHOOTING



Schematic of GSM/DCS/PCS Rx Block





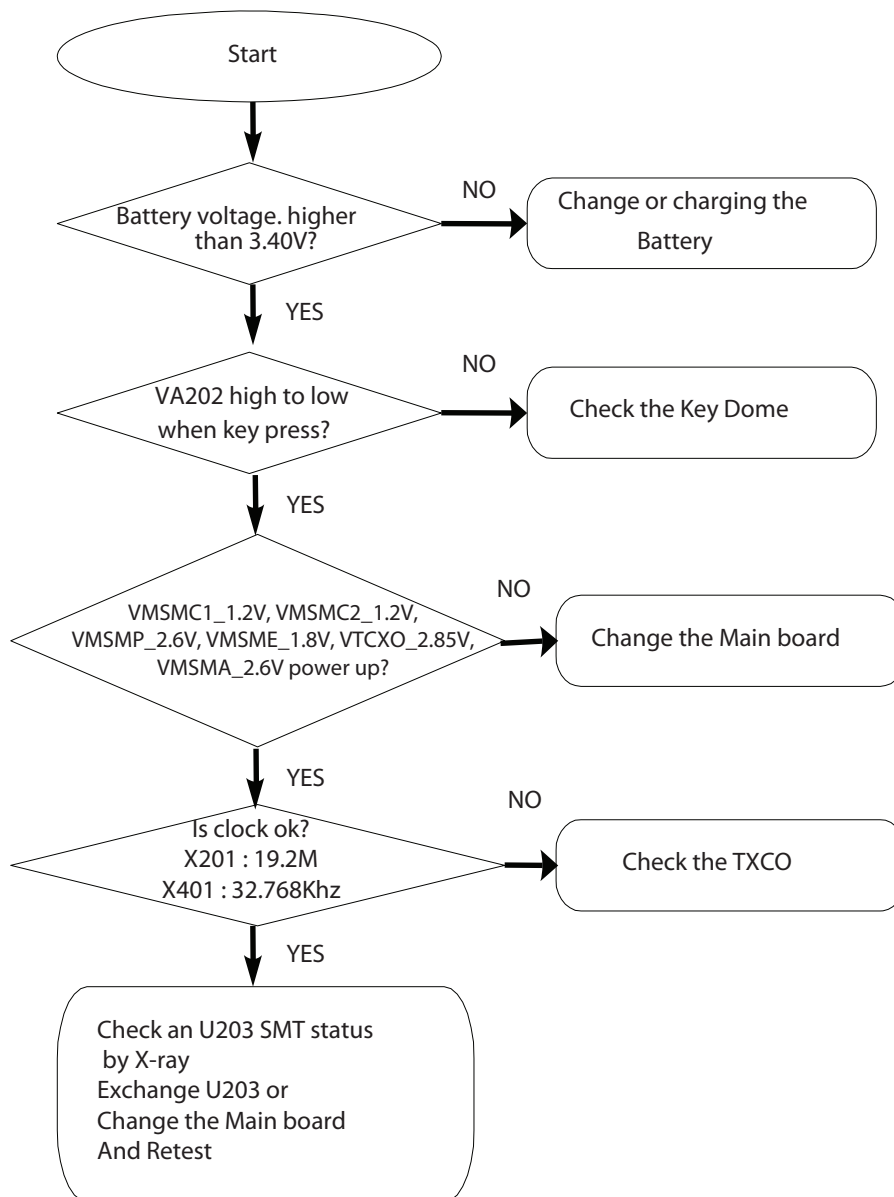


## 4. TROUBLE SHOOTING

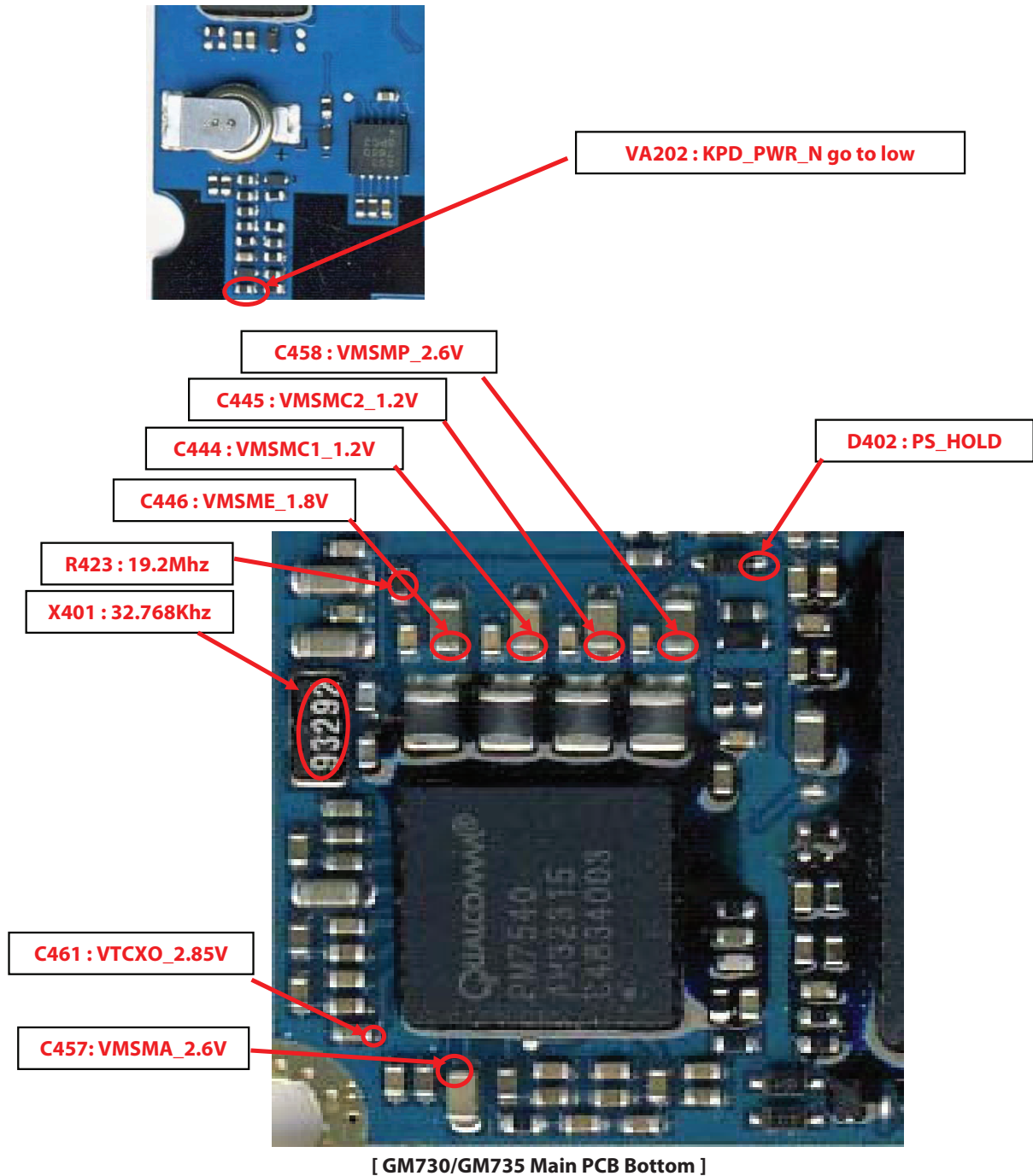
### 4.7 Power ON Troubleshooting

Power On sequence of GM730/GM735 is :

END key press → KPD\_PWR\_N go to low(VA202), PM7540 KPDPWR\_N pin(C12) → PM7540 Power Up → VMSMC1\_1.2V(C444), VMSMC2\_1.2V(C445), VMSME\_1.8V(C446), VMSMP\_2.6V(C458), VMSMA\_2.6V(C457), VTCXO\_2.85V(C461) power up and system reset assert to MSM → Phone booting and PS\_HOLD(D407) assert to PMIC



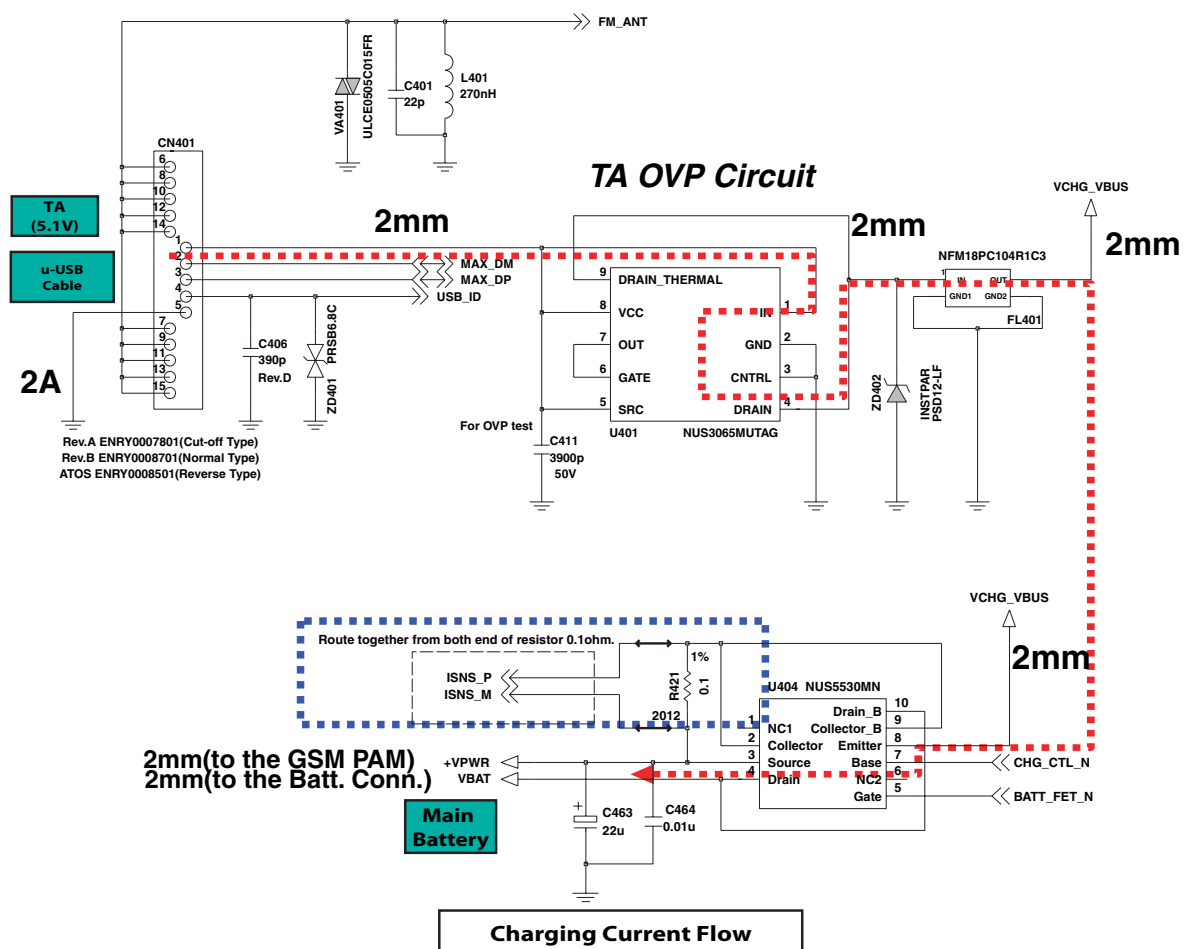
## 4. TROUBLE SHOOTING



## 4. TROUBLE SHOOTING

### 4.8 Charger Troubleshooting

#### u-USB Connector



#### Charging Procedure

- Connect TA or u-USB Cable
- Control the charging current by PM7540 IC
- Charging current flows into the battery

#### Check Point

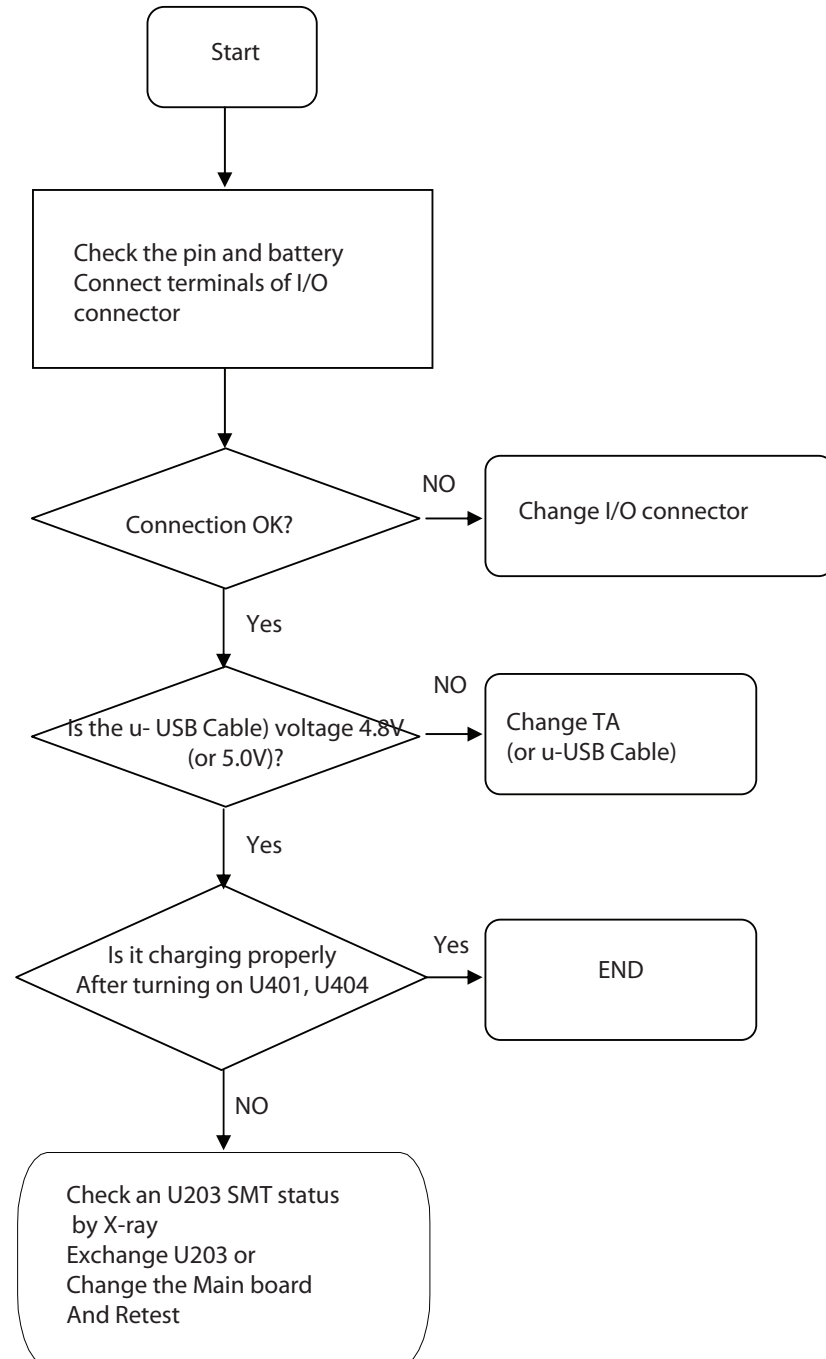
- Connection of TA or USB Cable
- Charging current path
- Battery

#### Troubleshooting Setup

- Connect TA and battery to the phone

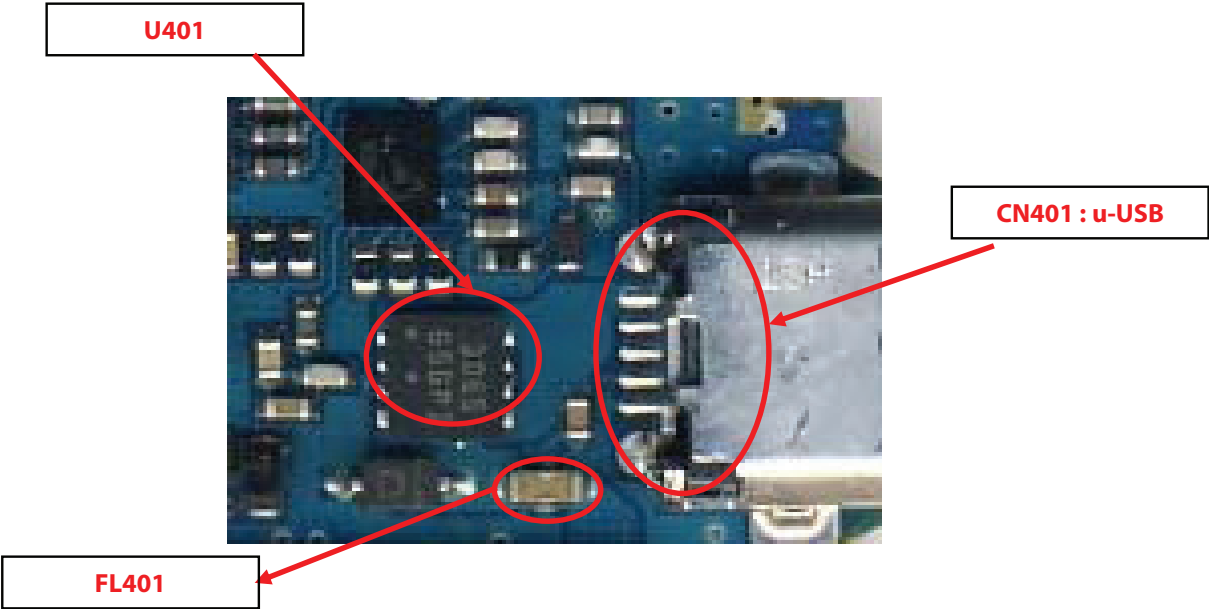
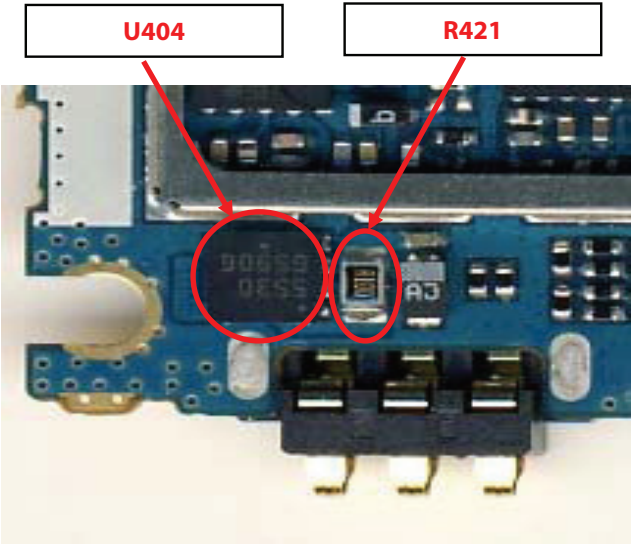
#### Troubleshooting Procedure

- Check the charger (TA or USB Cable) connector
- Check the OVP circuit
- Check the charging current Path
- Check the battery



[ Charger Troubleshooting Flow ]

4. TROUBLE SHOOTING



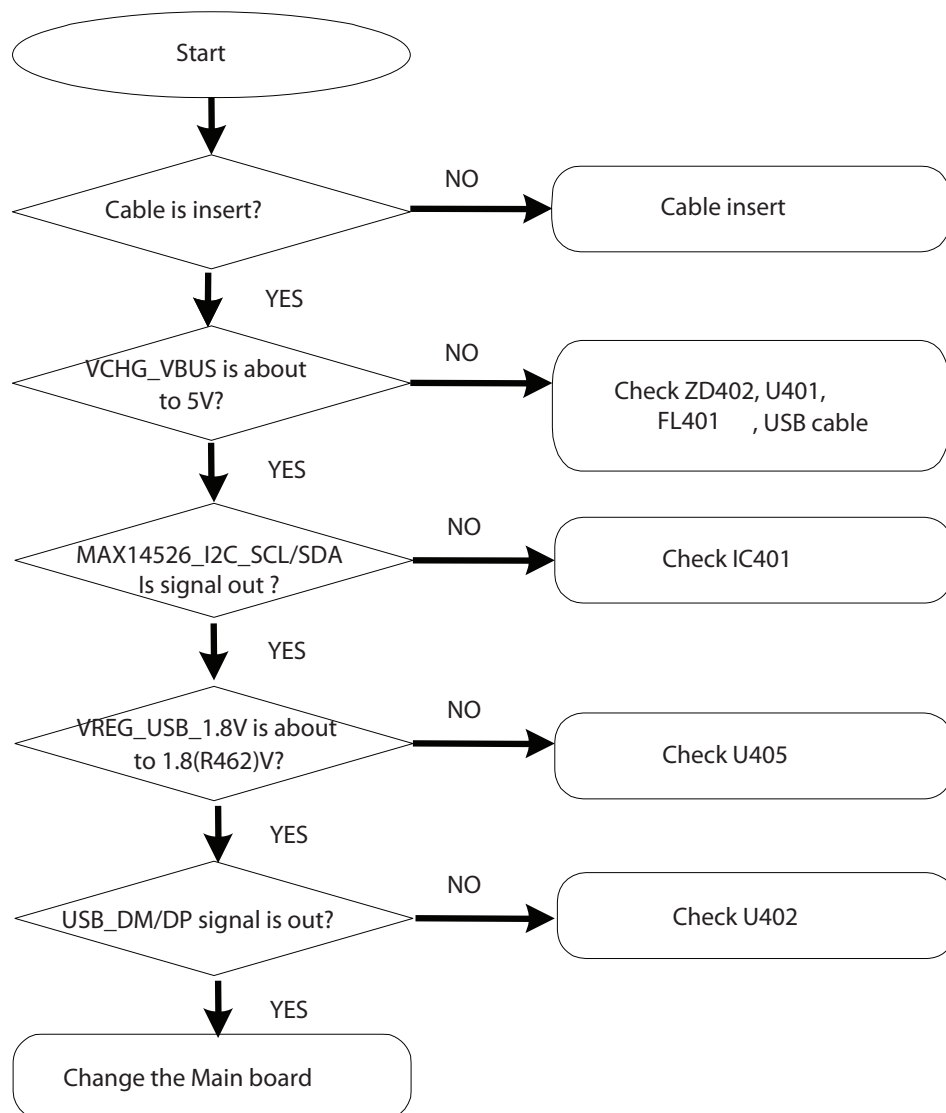
[ Charging part ]

### 4.9. USB trouble

USB Initial sequence of GM730/GM735 is :

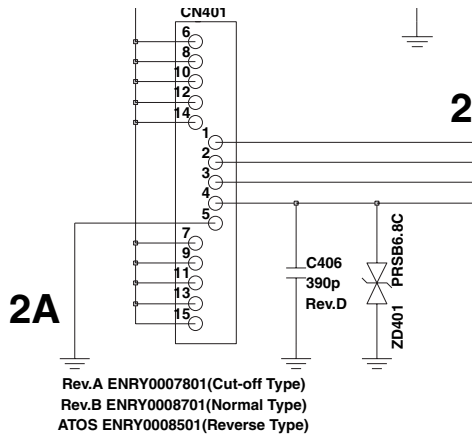
USB connected to GM730/GM735 → VCHG\_VBUS(R409) go to 5V

→ VERG\_USB\_1.8V is about 1.8V → USB\_DATA is triggered → USB work

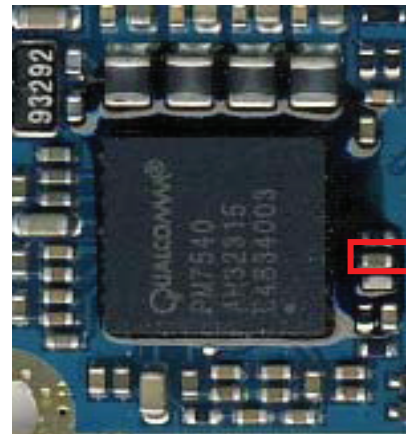
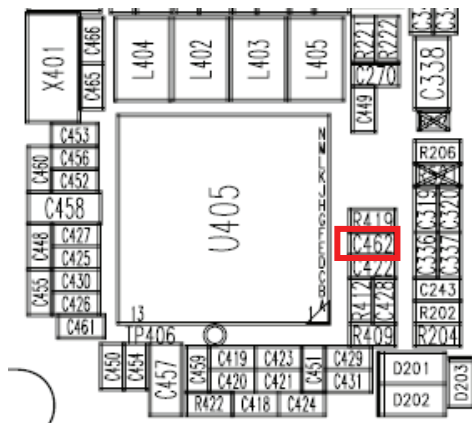
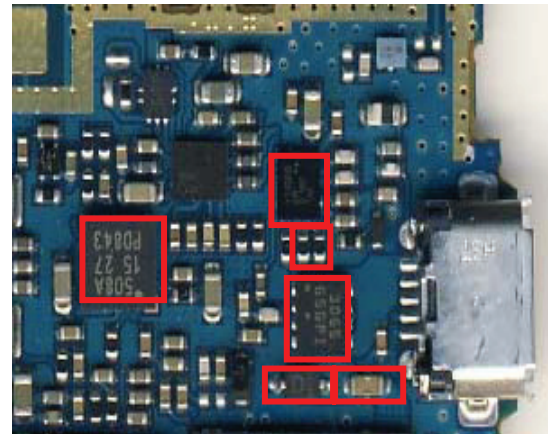
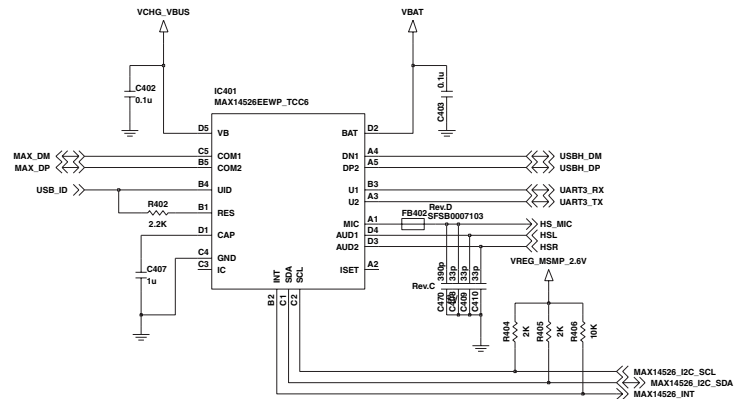


## 4. TROUBLE SHOOTING

### u-USB Connector



### MAX14526

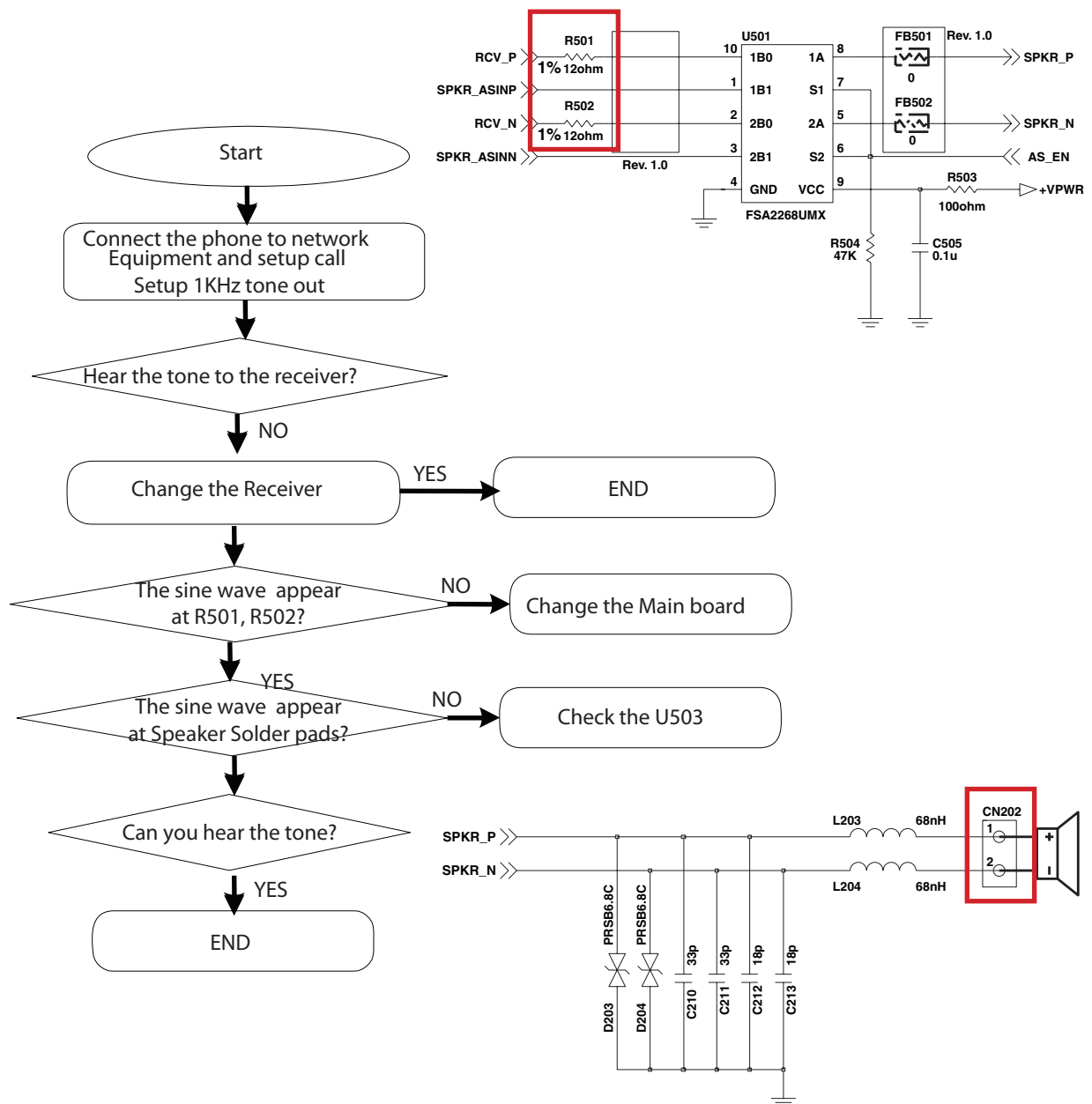


### 4.10. Audio trouble

#### 4.10.1. Receiver path

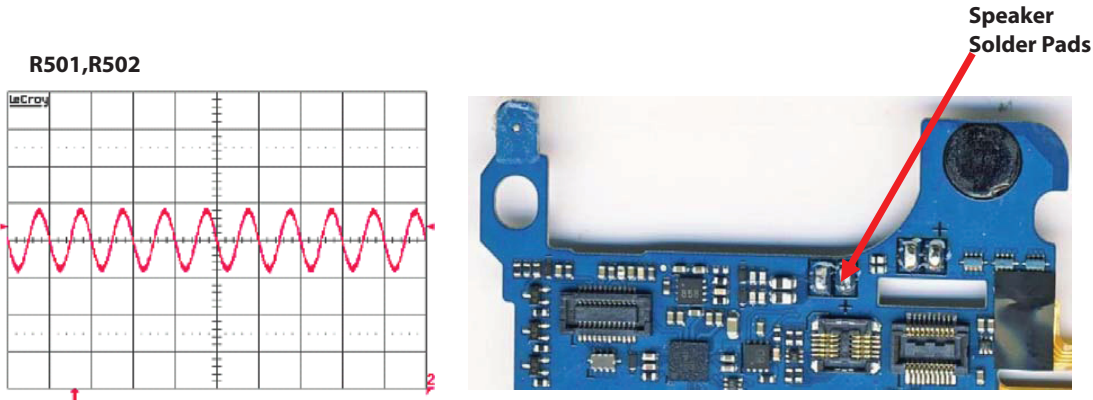
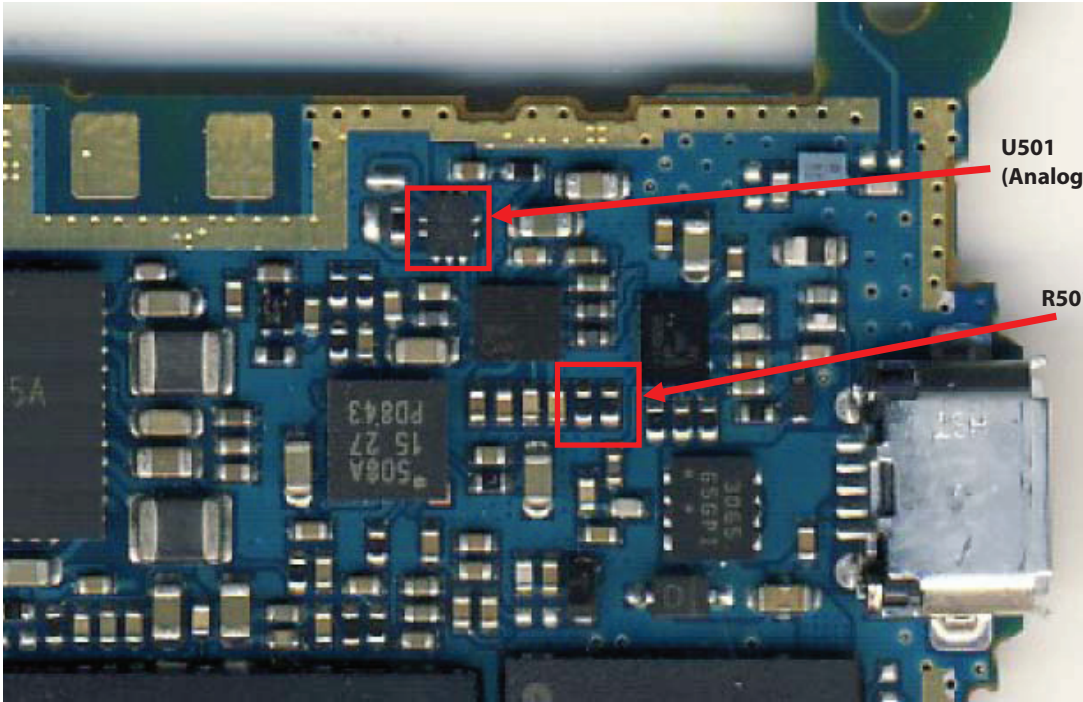
Voice Receiver path as below:

MSM7200A Ear\_ON/Ear\_OP → U501 (Analog S/W) → Speaker solder PAD → Speaker





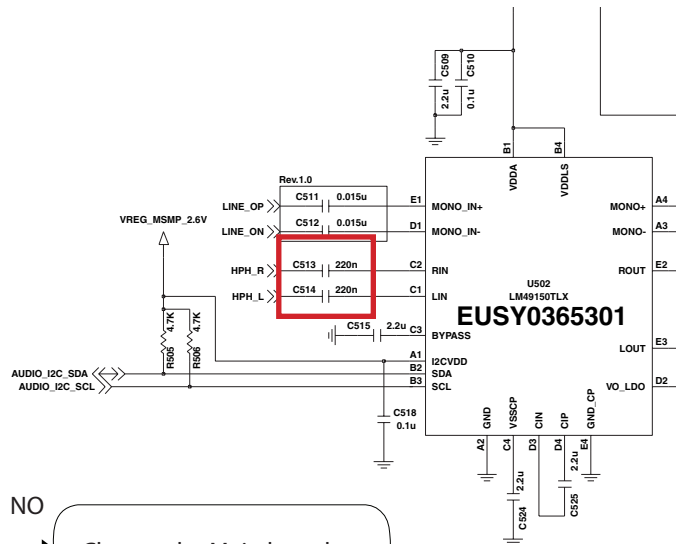
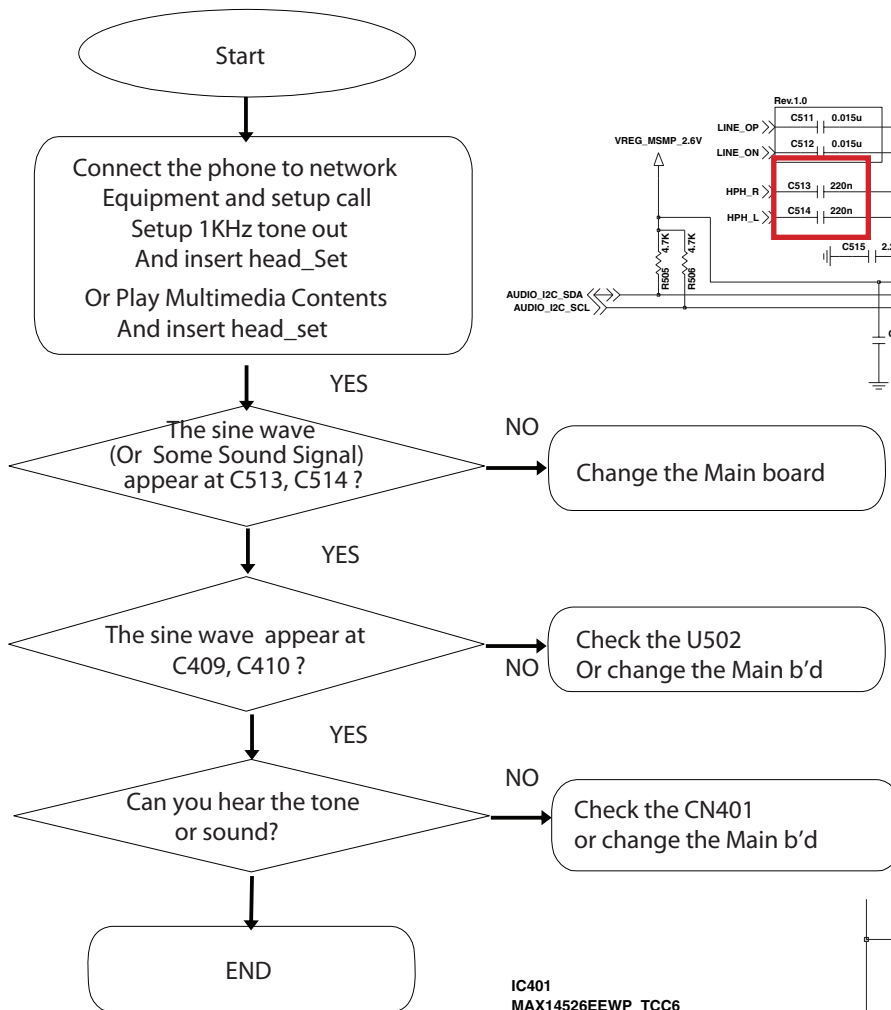
4. TROUBLE SHOOTING



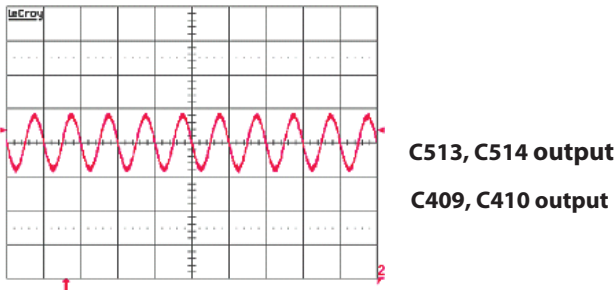
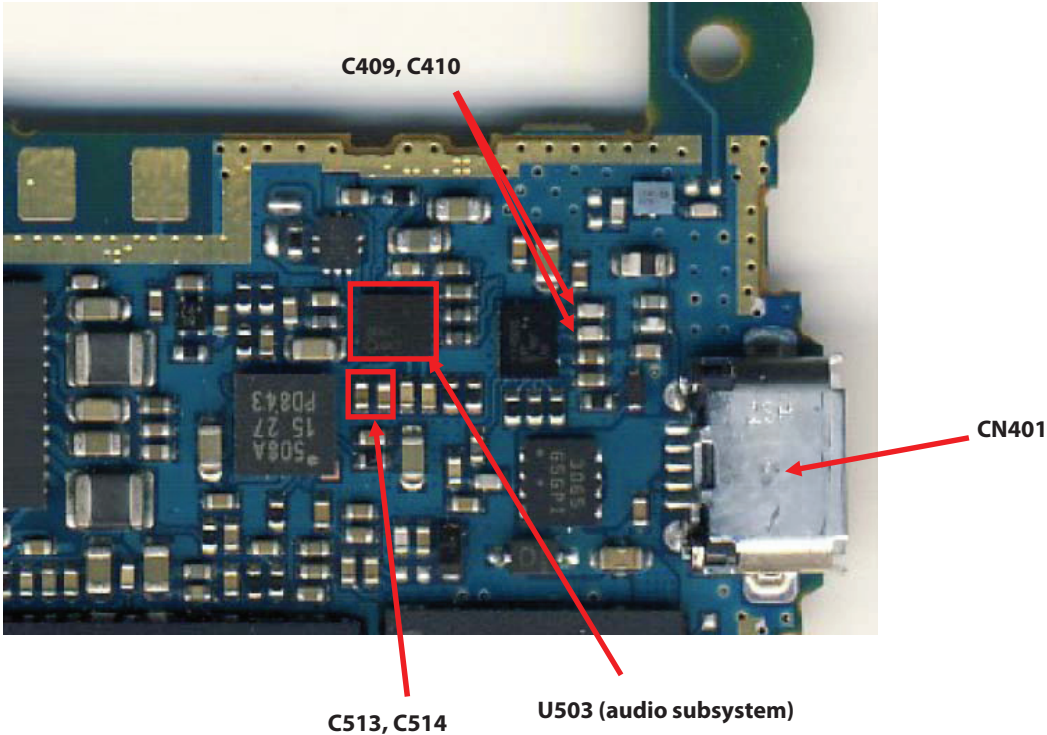
### 4.10.2. Headset path (Voice & Multimedia play)

Voice path for Head\_Set as below:

MSM7200A HPH\_R, HPH\_L → C513, C514 → U502 (Audio Subsystem) → C409, C410 → #2, #3 pin of CN401 u-USB connector



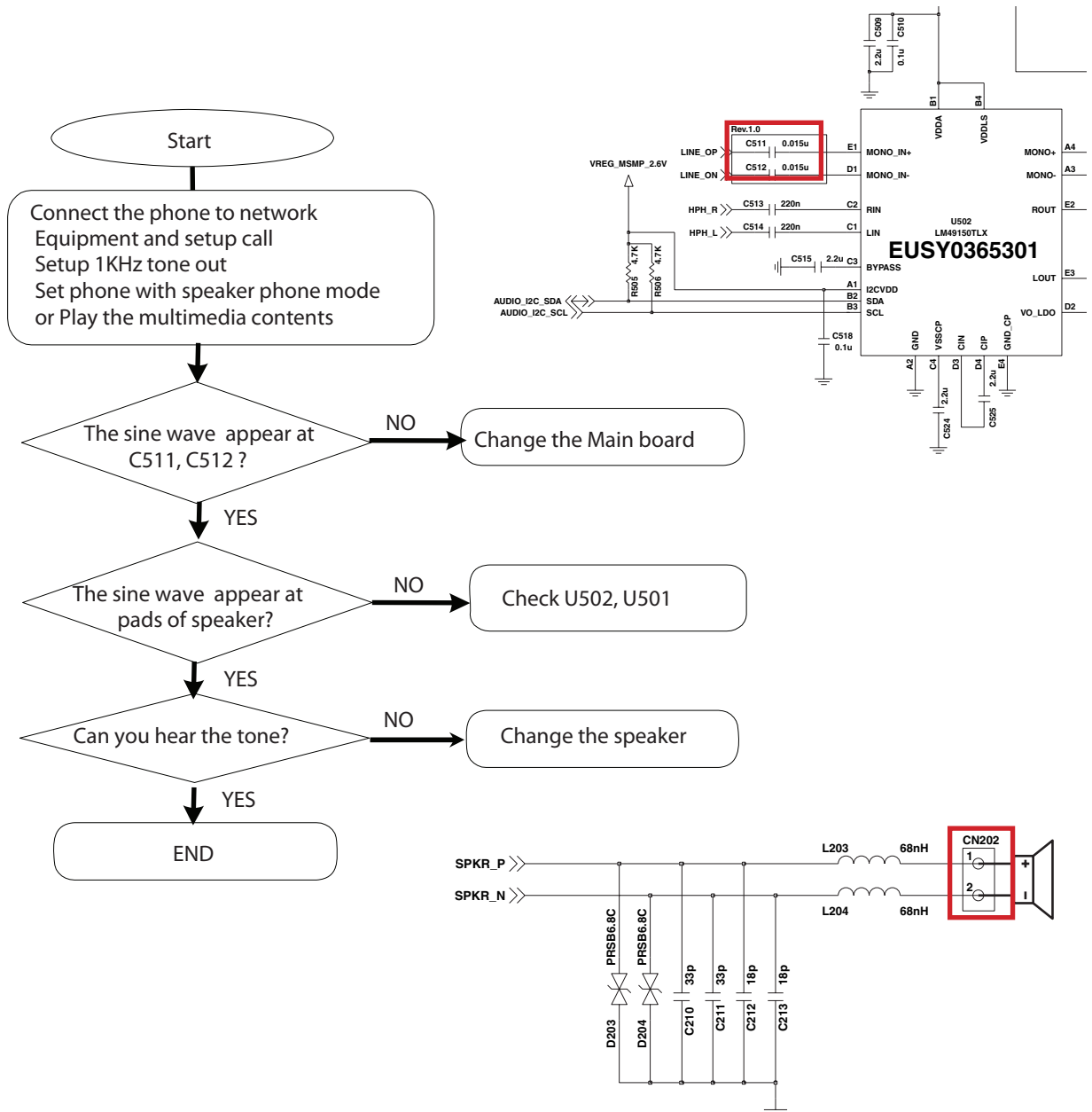
# 4. TROUBLE SHOOTING



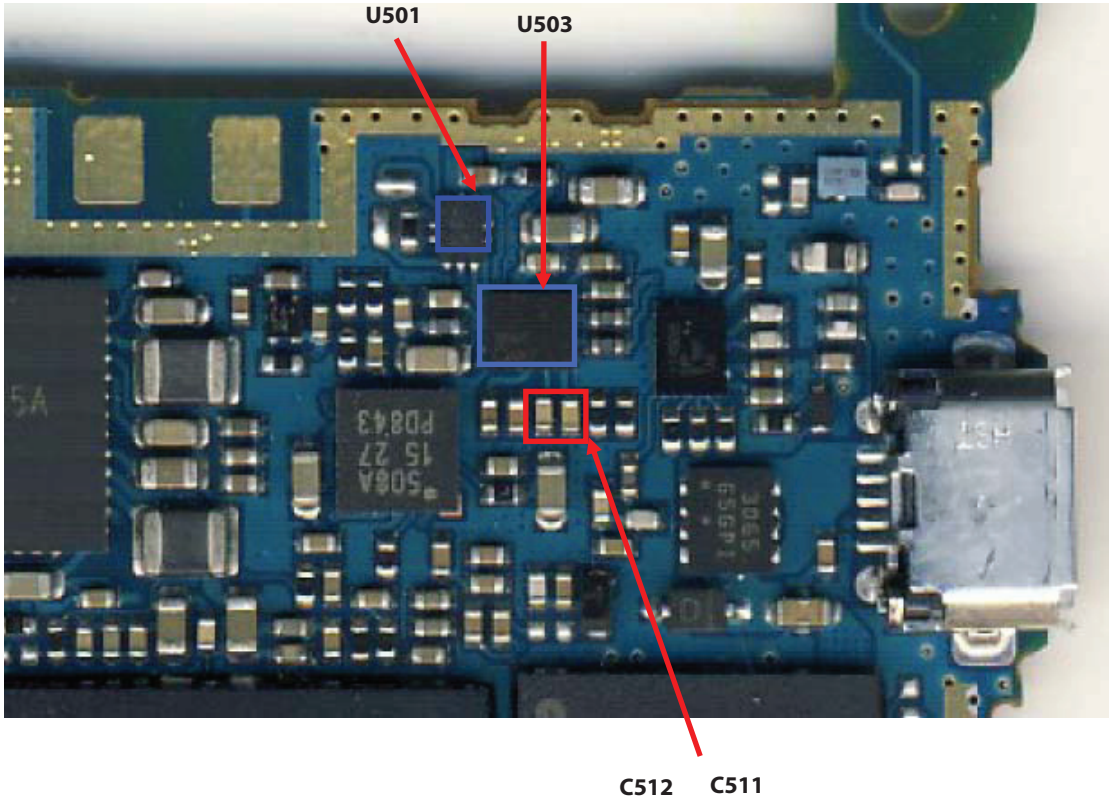
### 4.10.3. Loud speaker path (voice speaker phone, Multimedia play)

Loud speaker path as below:

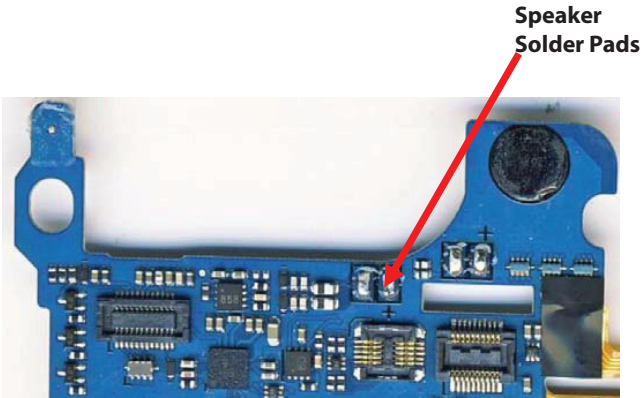
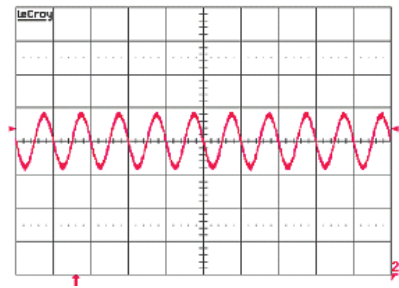
MSM7200A Line\_OP,ON → C511, C512 → U502 (Audio Subsystem) → U501 Analog S/W → speaker PAD



4. TROUBLE SHOOTING



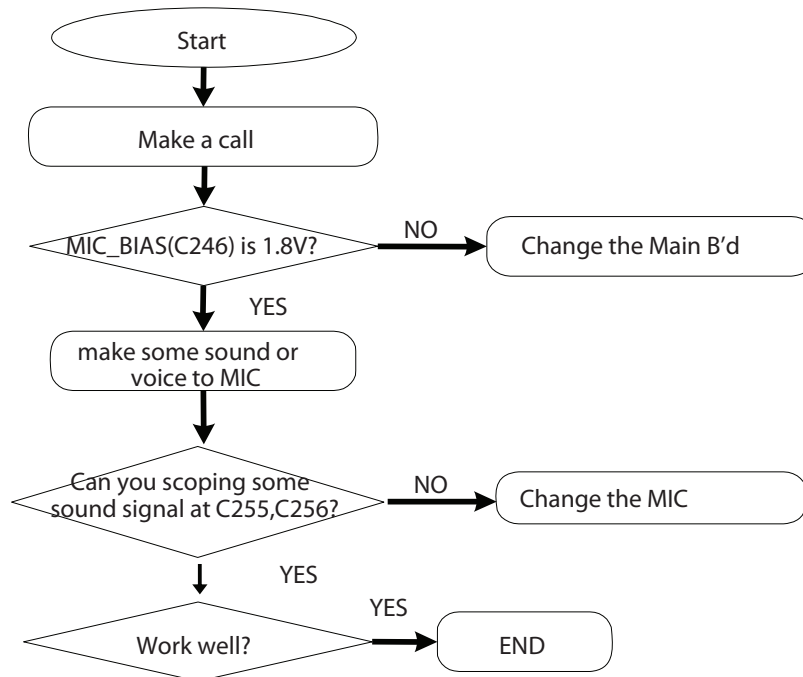
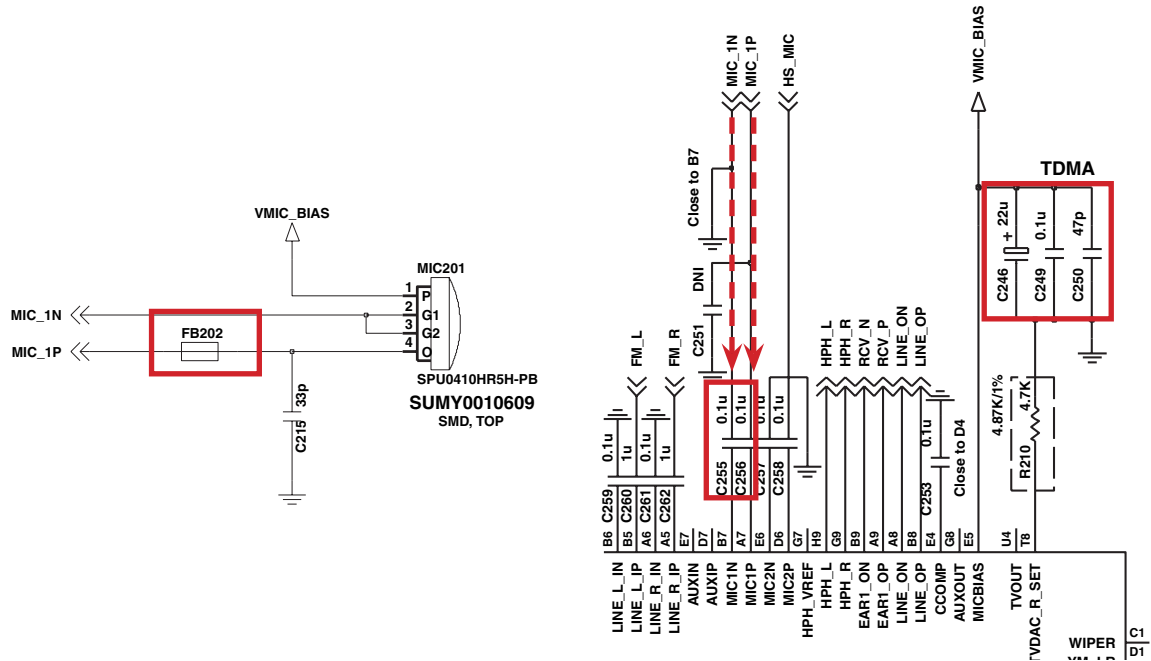
C511, C512 output



### 4.10.4. Microphone for main MIC

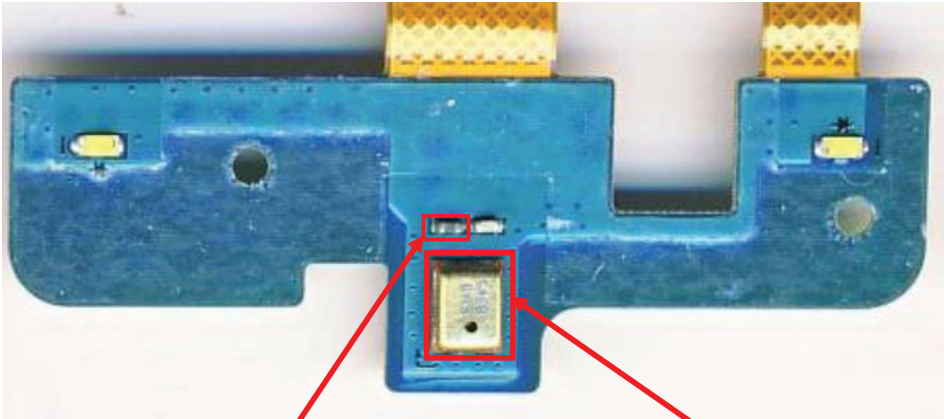
Main Microphone path as below:

MIC → FB202 → C255,C256 → MSM7200A



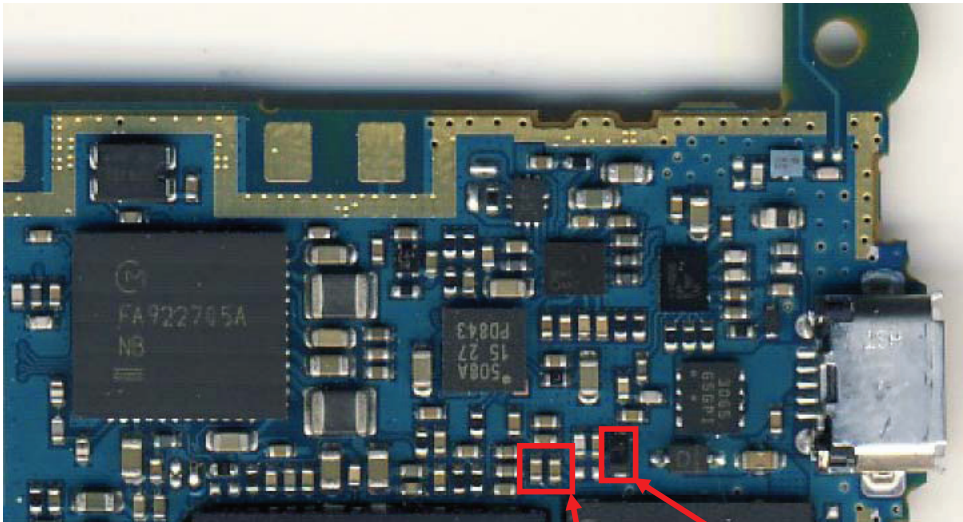


4. TROUBLE SHOOTING



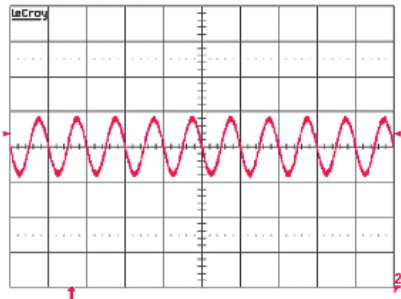
FB202

Main MIC (MIC201)



C255, C256

C246



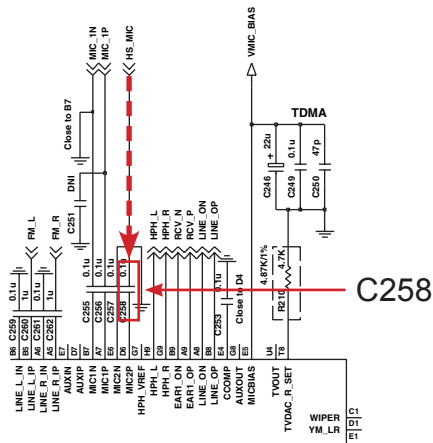
MIC- 1kHz tone- C255, C256

## 4.10.5. Microphone for headset

MIC for Head\_Set path as below:

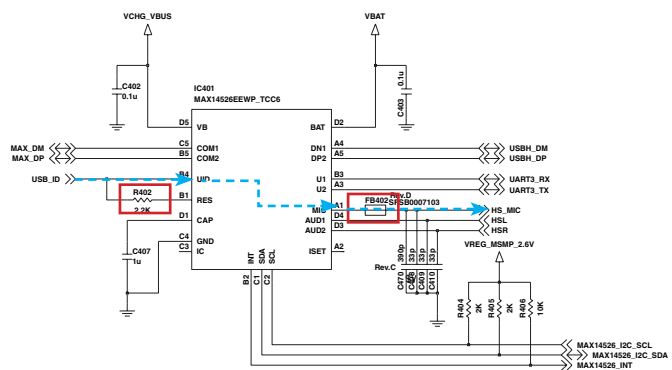
Insert Headset → Interrupt which are the signal of Headset detecting arise in MUIC(Max14526)

→ MAX14526 B1 (RES) : 2.3V(MIC BIAS) → MIC signal → MSM7200A

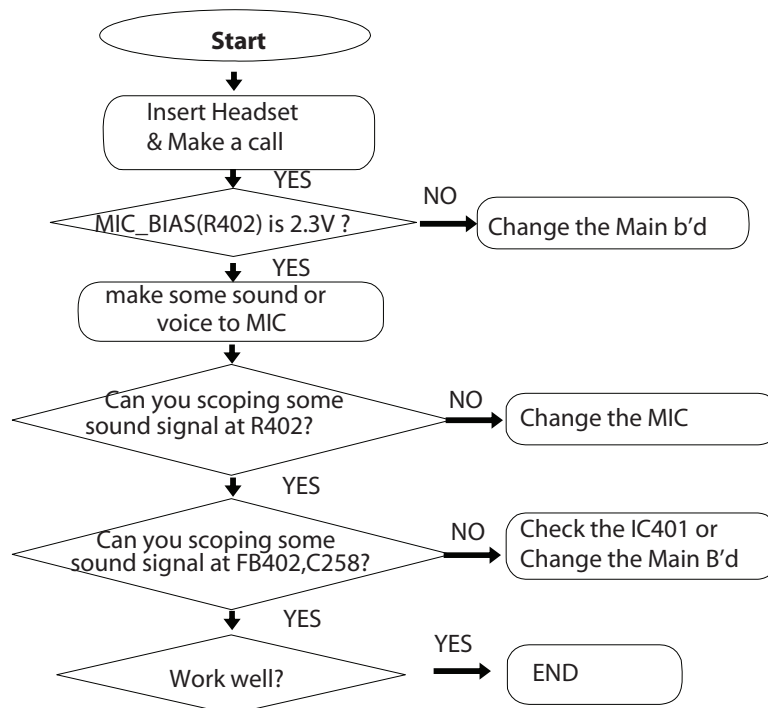


[MSM7200A]

## MAX14526

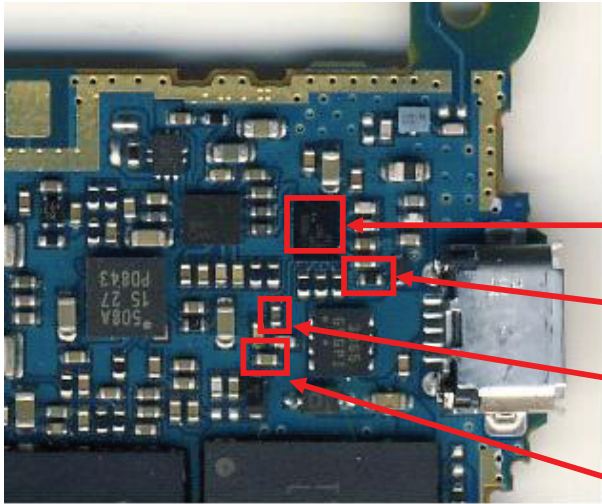


[IC401(MAX14526)]





# 4. TROUBLE SHOOTING



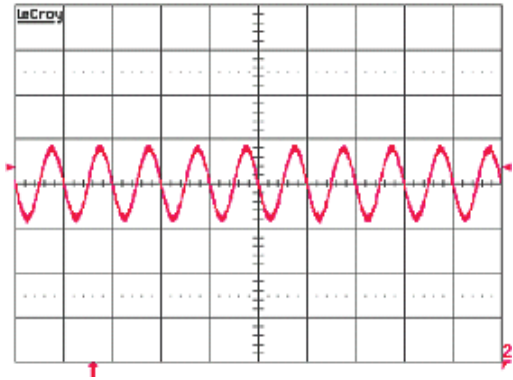
MUIC(MAX14526)

R402(MIC BIAS)

FB402(MIC SIGNAL)

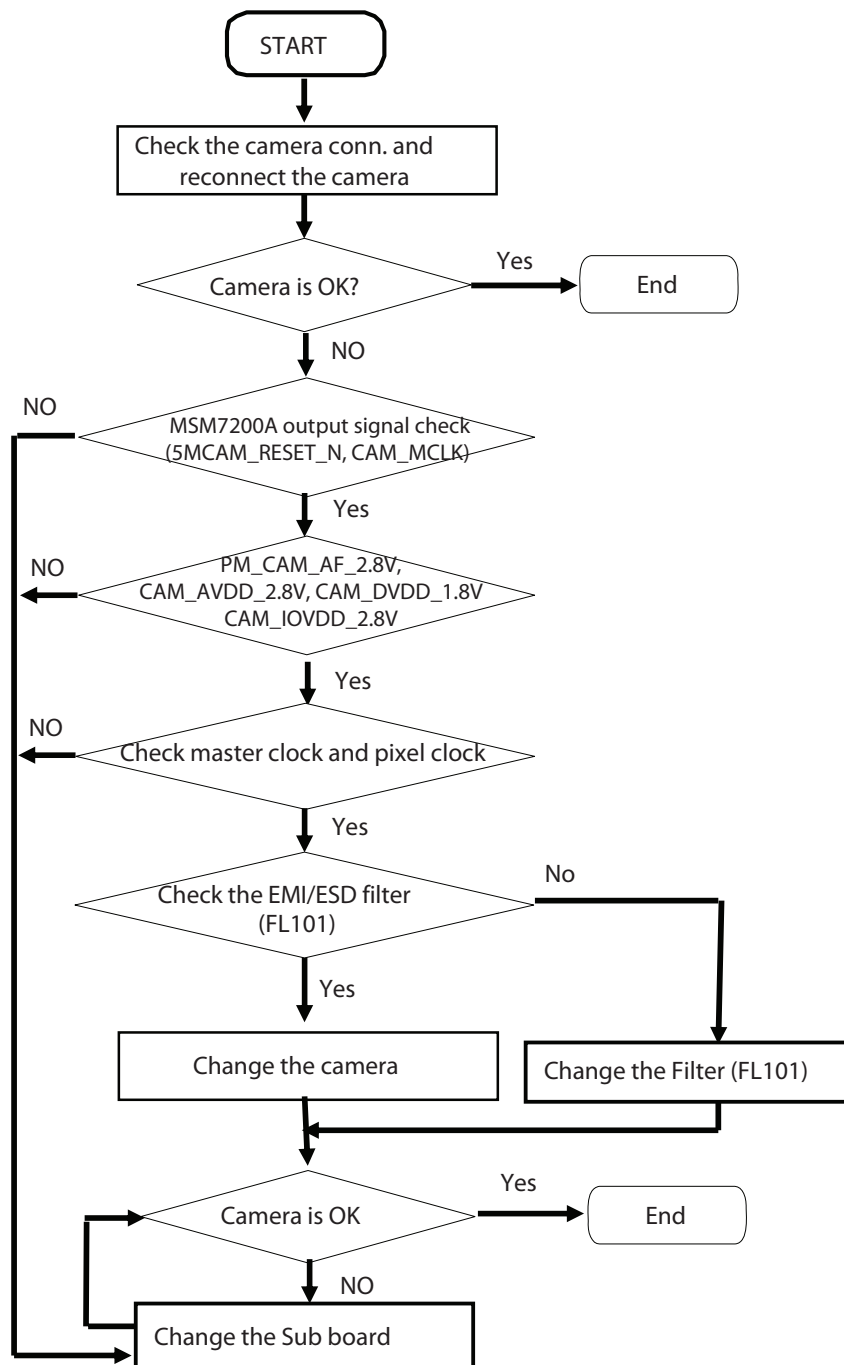
C258(HS\_MIC)

MIC- 1kHz tone- C258

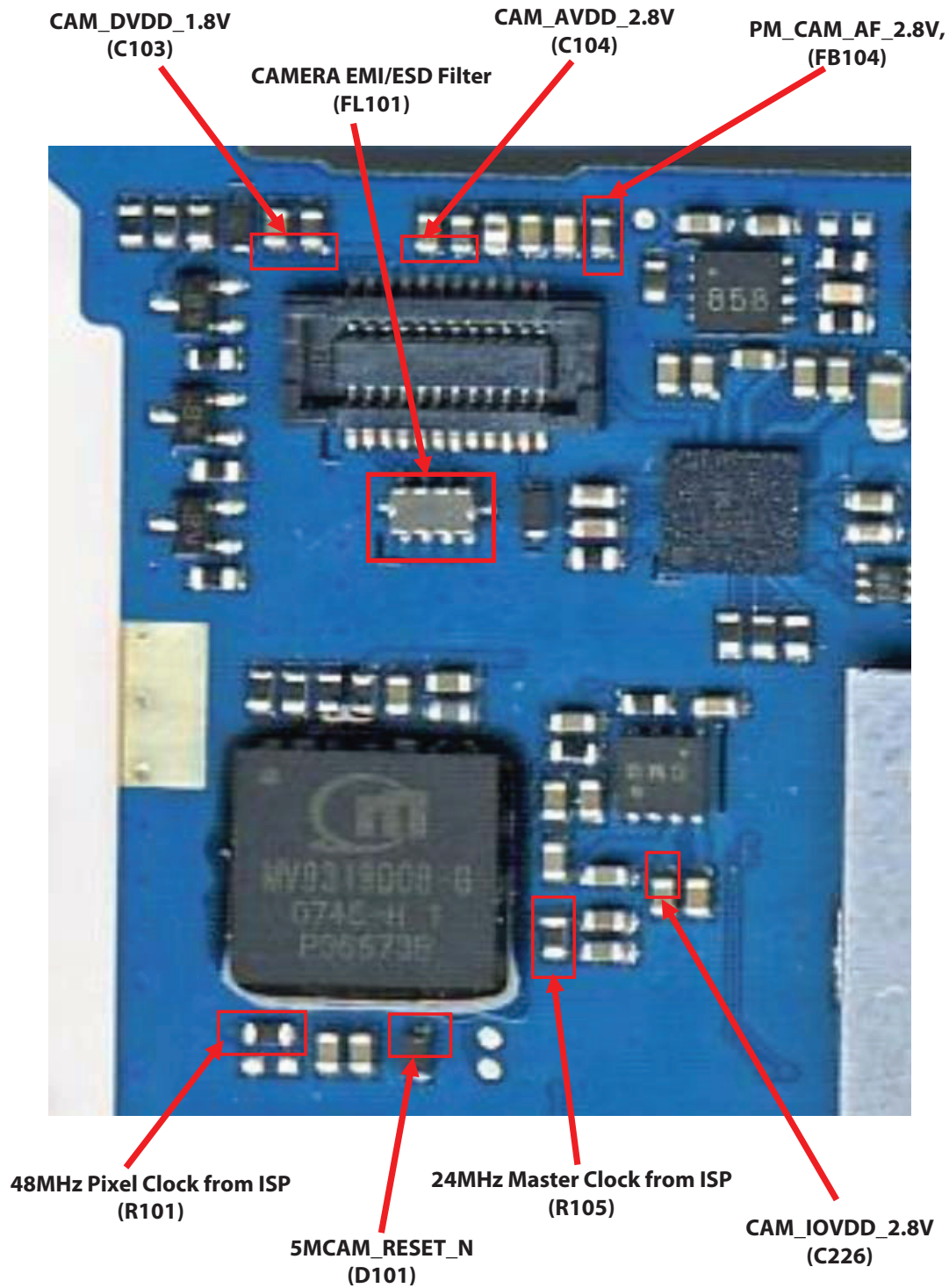


### 4. 11. 5M Camera trouble

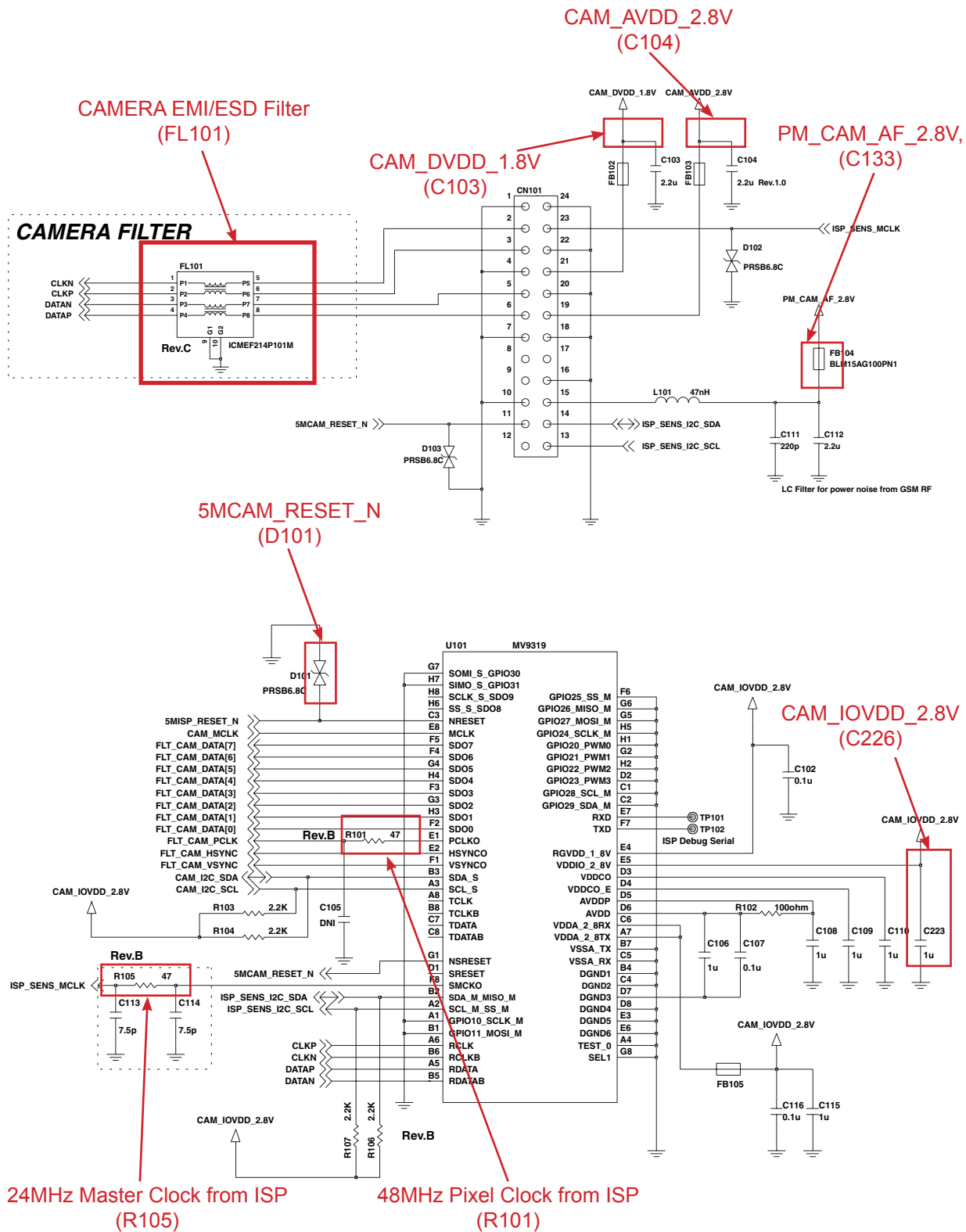
5M camera control signals are generated by MV9319 and MSM7200A.



## 4. TROUBLE SHOOTING



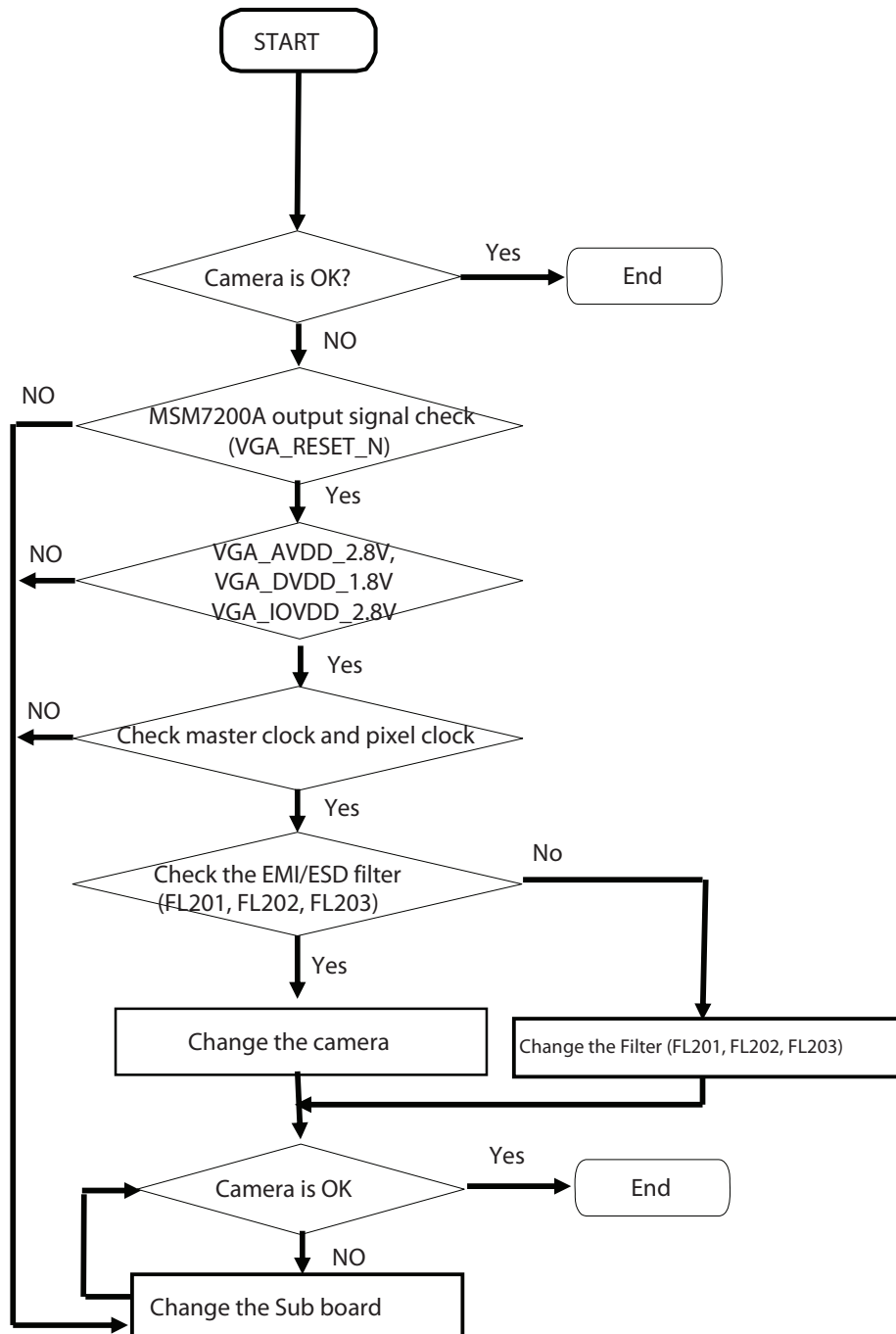
## 4. TROUBLE SHOOTING



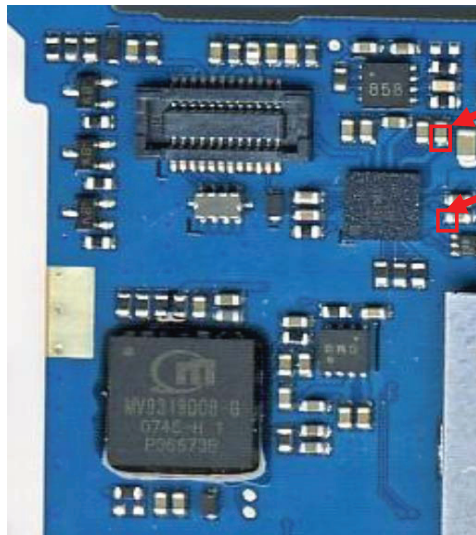
## 4. TROUBLE SHOOTING

### 4.12. VGA Camera trouble

VGA camera control signals are generated by MSM7200A.

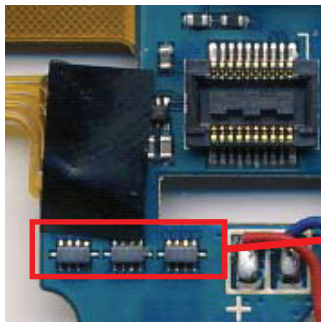


## 4. TROUBLE SHOOTING

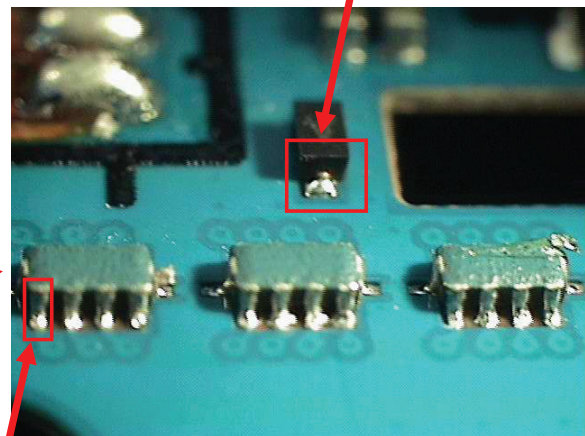


VGA\_DVDD\_1.8V  
(C132)

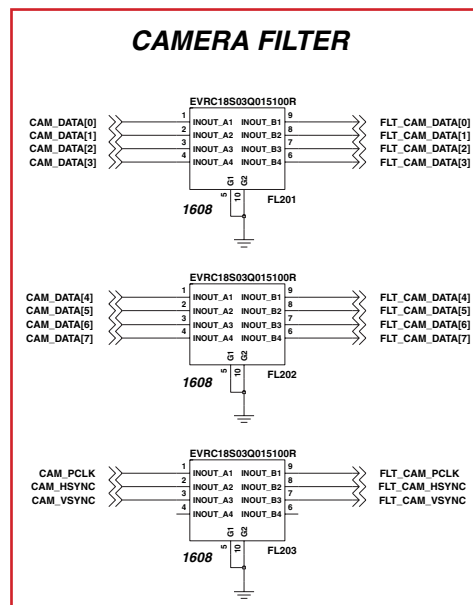
VGA\_AVDD\_2.8V,  
VGA\_IOVDD\_2.8V  
(C135)



VGA\_RESET\_N  
(D201)

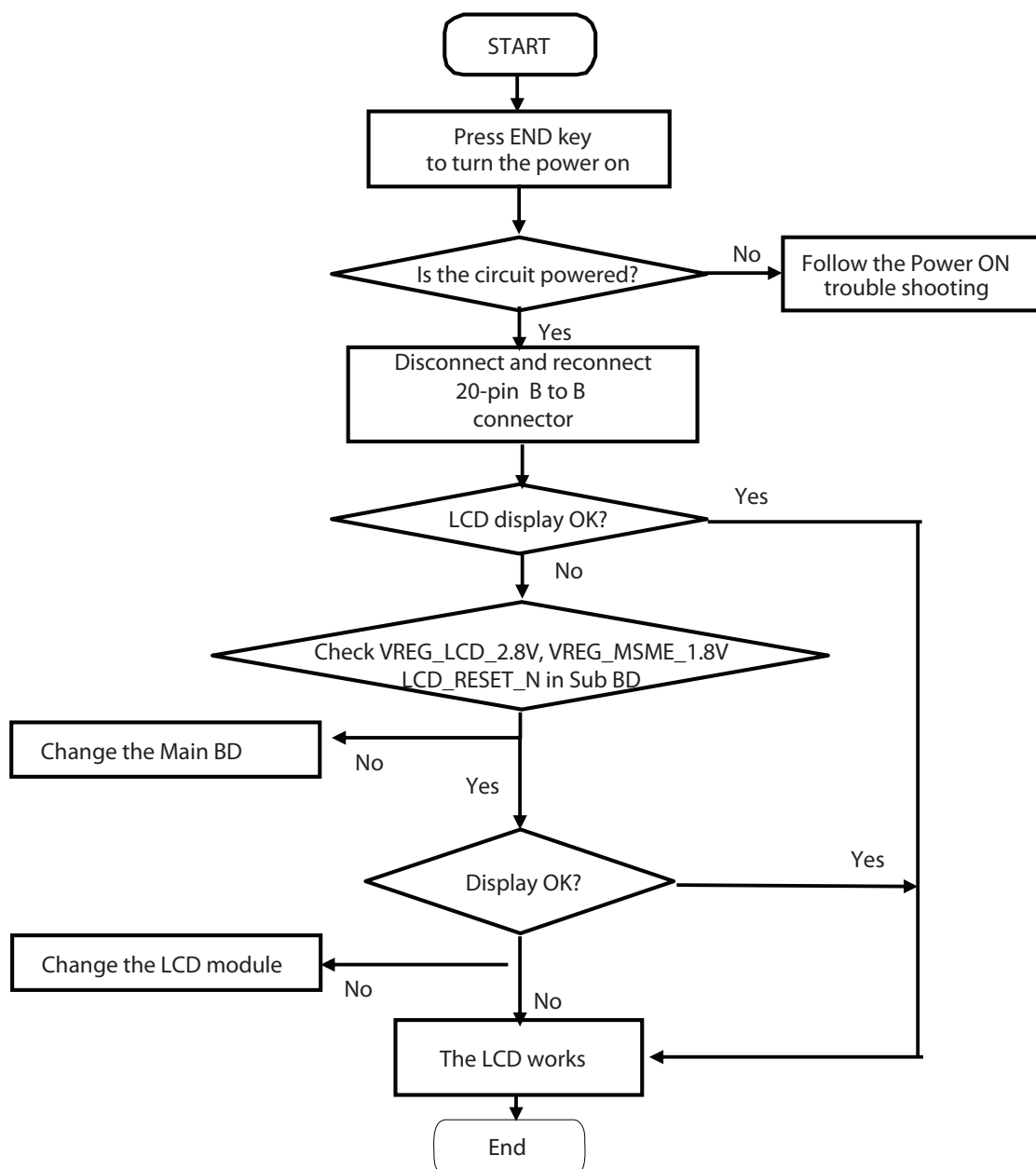


19.2MHz Pixel Clock  
(FL203)



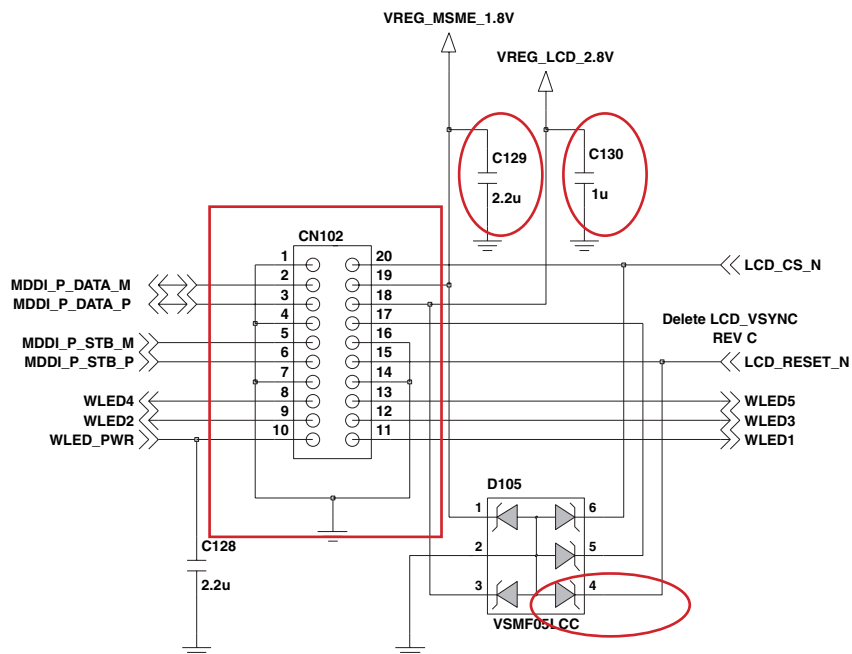
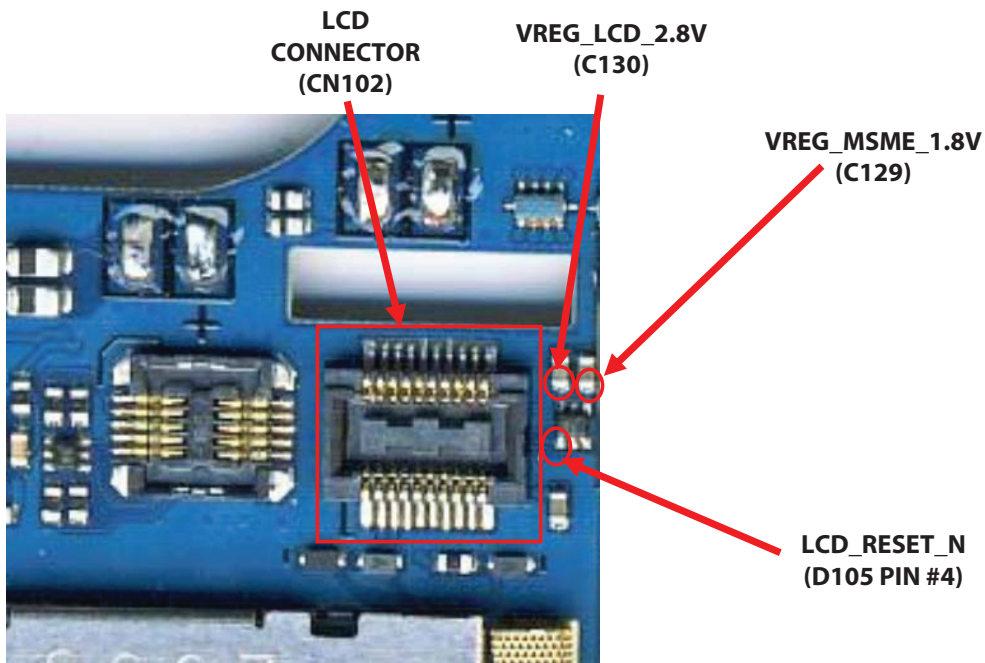
### 4. 13. Main LCD trouble

Main LCD control signals are generated by MSM7200A. Those signal's path are :  
MSM7200A → 20-pin LCD connector → LCD Module



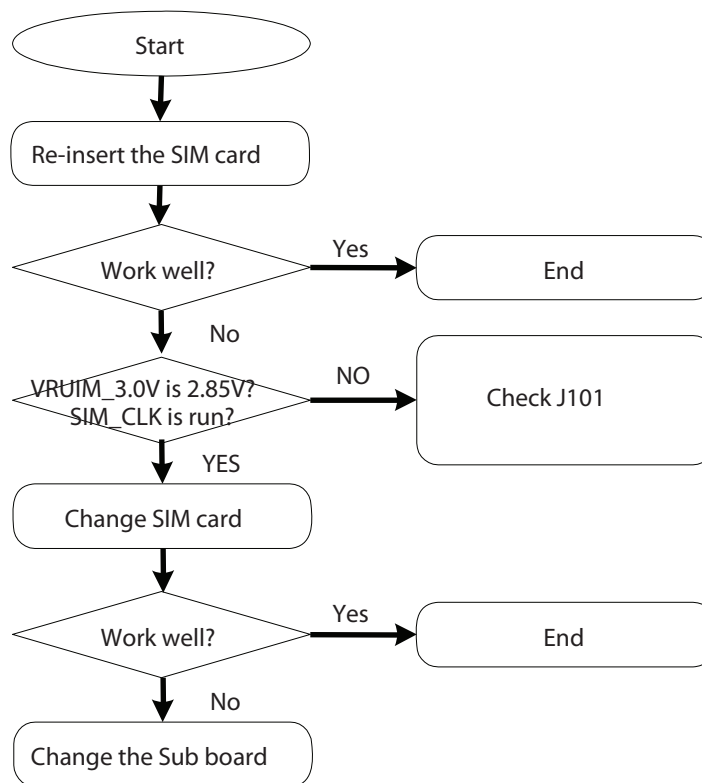


## 4. TROUBLE SHOOTING

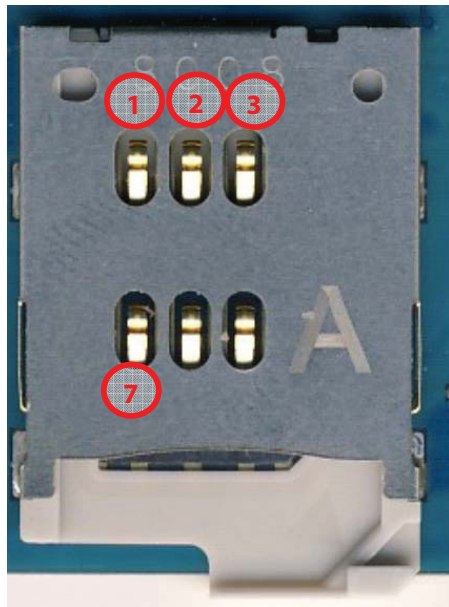


### 4.14 SIM Detect Troubleshooting

USIM Initial sequence of GM730/GM735 is :  
SIM\_CLK, SIM\_RST, SIM\_IO triggered → VRUIM\_3.0V go to 2.8V → SIM IF work



## 4. TROUBLE SHOOTING



- ① VRUIM\_3.0V
- ② SIM\_RST
- ③ SIM\_CLK
- ⑦ SIM\_IO

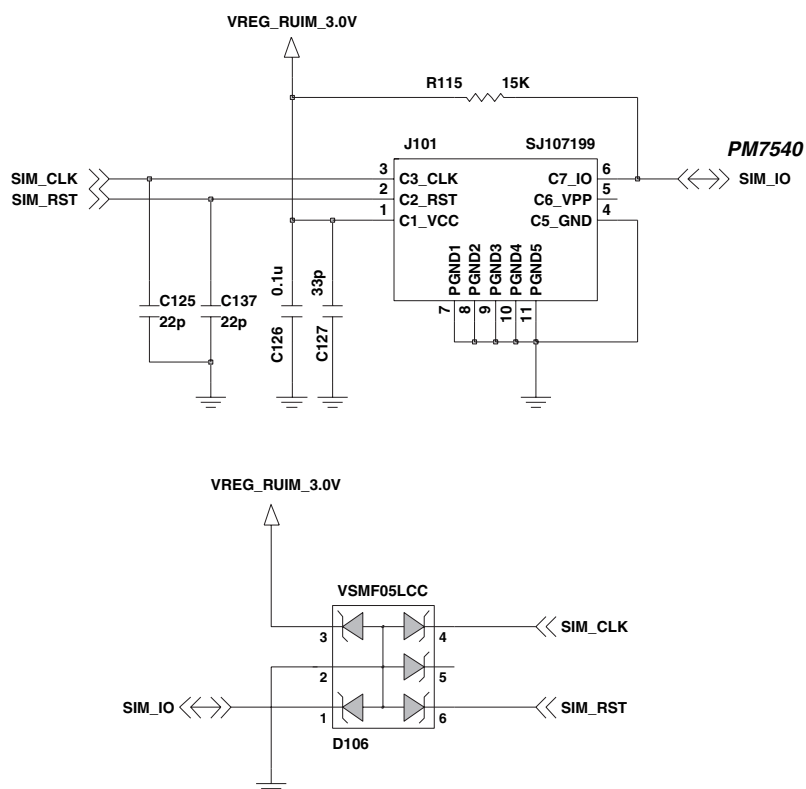
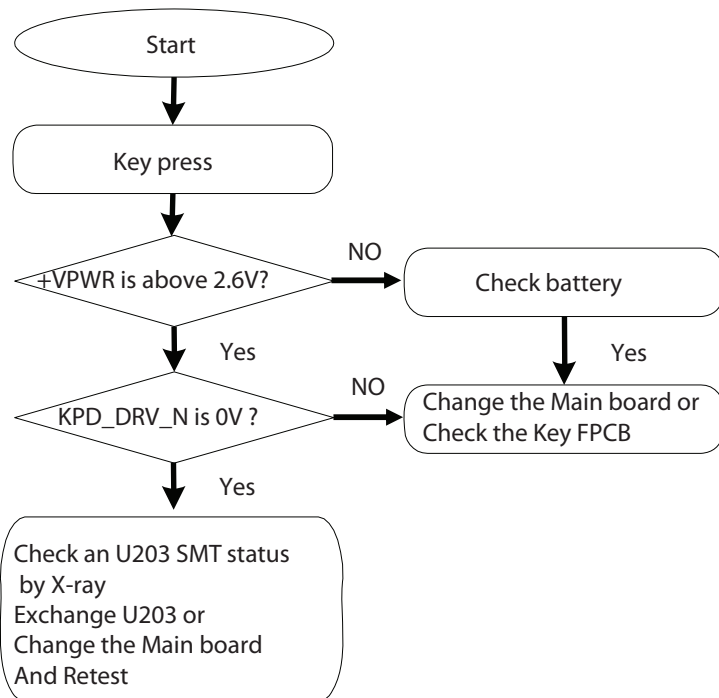


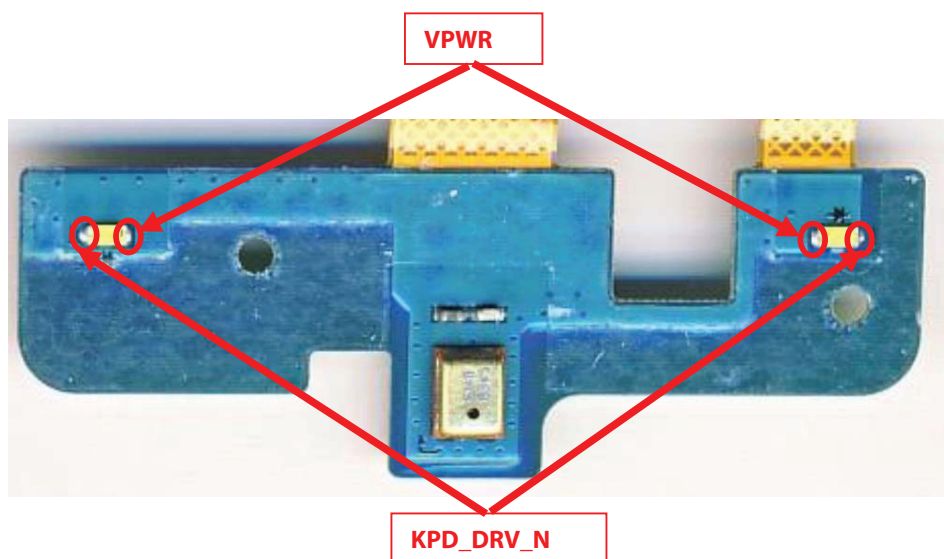
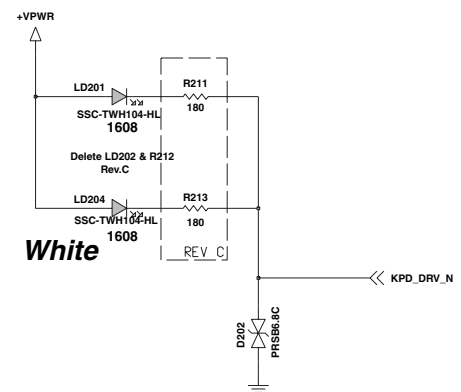
Figure .USIM part schematics

### 4.15 Keypad Backlight Troubleshooting

Key Pad Back Light is on as below :  
Key pressing → KPD\_DRV\_N go to 0V → Key Backlight LED On



### KEY BACKLIGHT LED

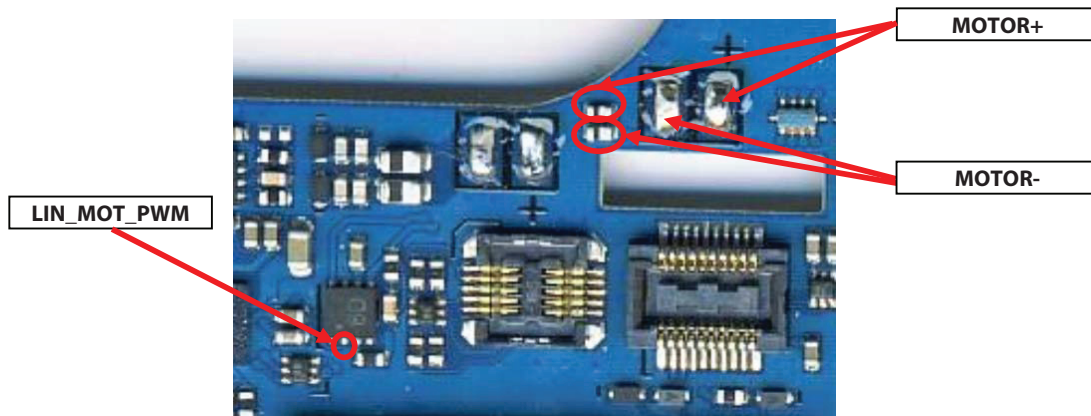
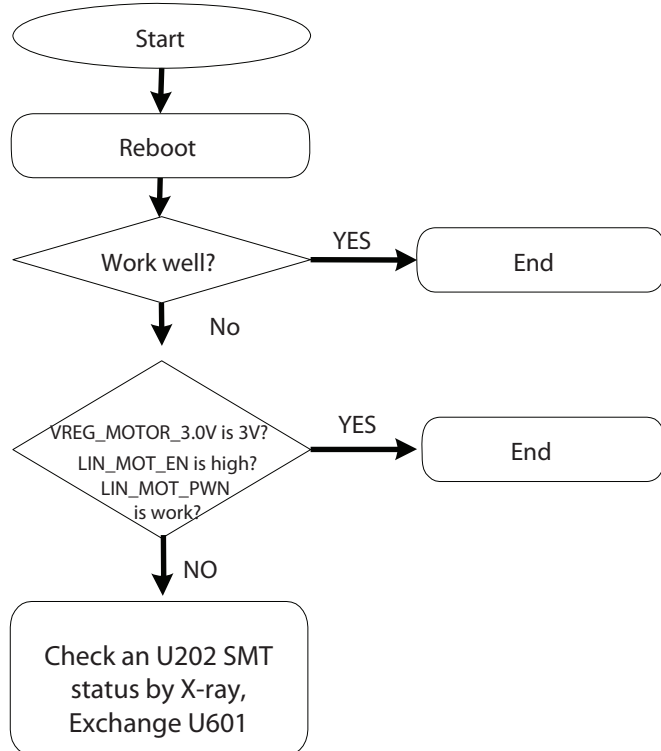


## 4. TROUBLE SHOOTING

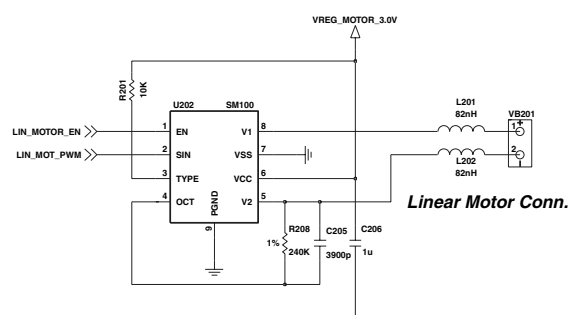
### 4.16 LINEAR MOTOR

Linear Motor is worked as below :  
touch touch-window  
→ Vibration feedback

U202 : Used the PWM pulse



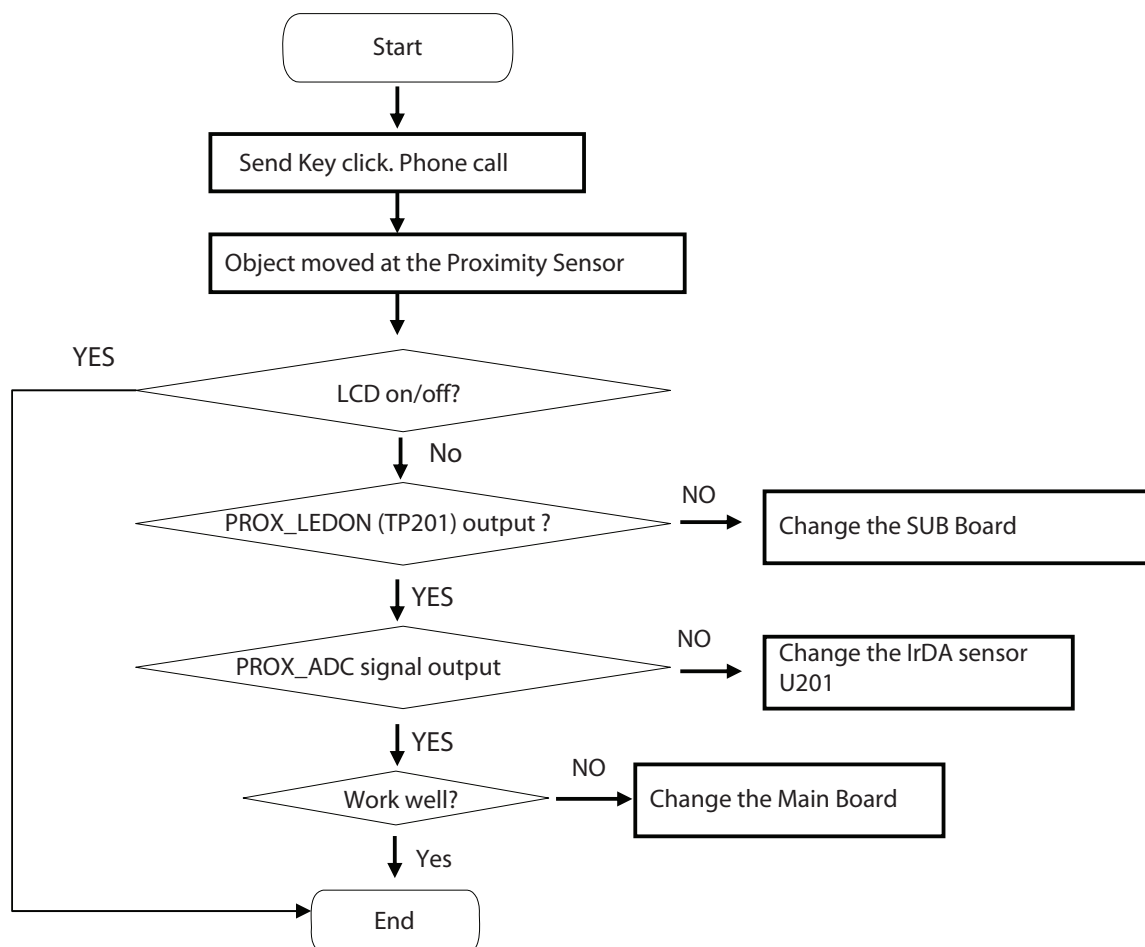
**LINEAR MOTOR DRIVER**  
**EUSY0200803**  
**Rev.B**



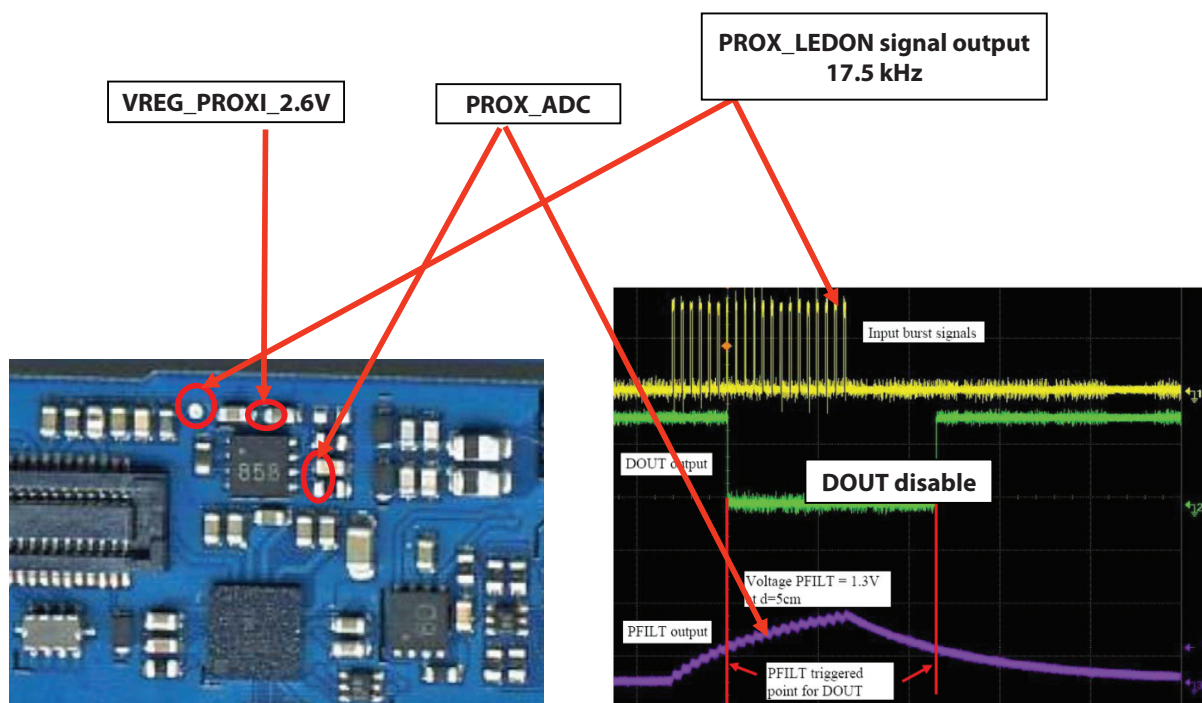
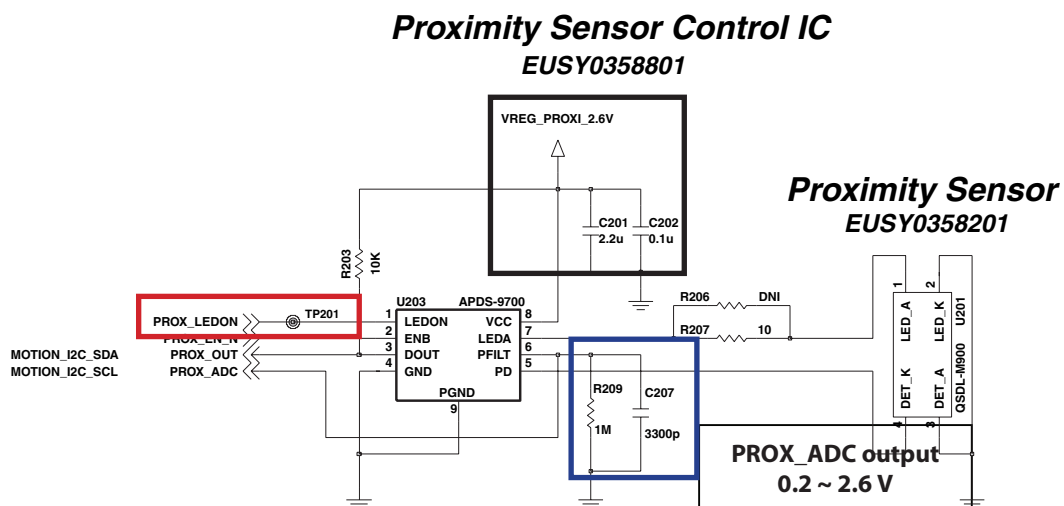
### 4.17 Proximity Sensor on/off trouble

Proximity Sensor is worked as below :

Send Key click → Phone number click → Call connected → Object moved at the sensor  
→ Control the screen's on/off operation automatically



- VCC : VREG\_MSMP\_2.6V (C201, C202)
- PROX\_LEDON : 17.5 kHz pulse (TP201)
- PROX\_ADC : 0.2 ~ 2.6 V (R209, C207)



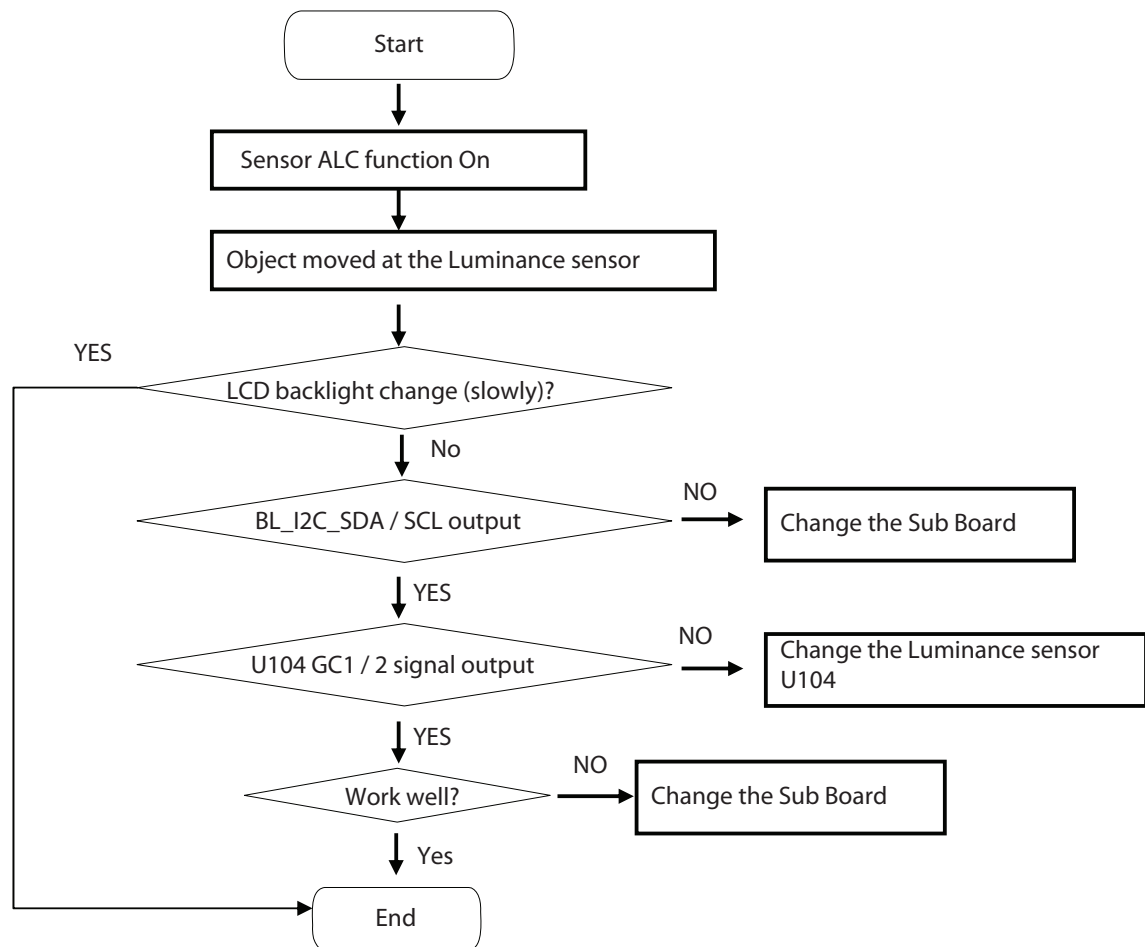
**Figure. Engineer Mode Proximity Test**

### 4.18 Luminance Sensor on/off trouble

Luminance Sensor is worked as below :

Sensor ALC function On → Object moved at the Luminance sensor

→ automatically controls brightness of the display backlight. (Very slowly)

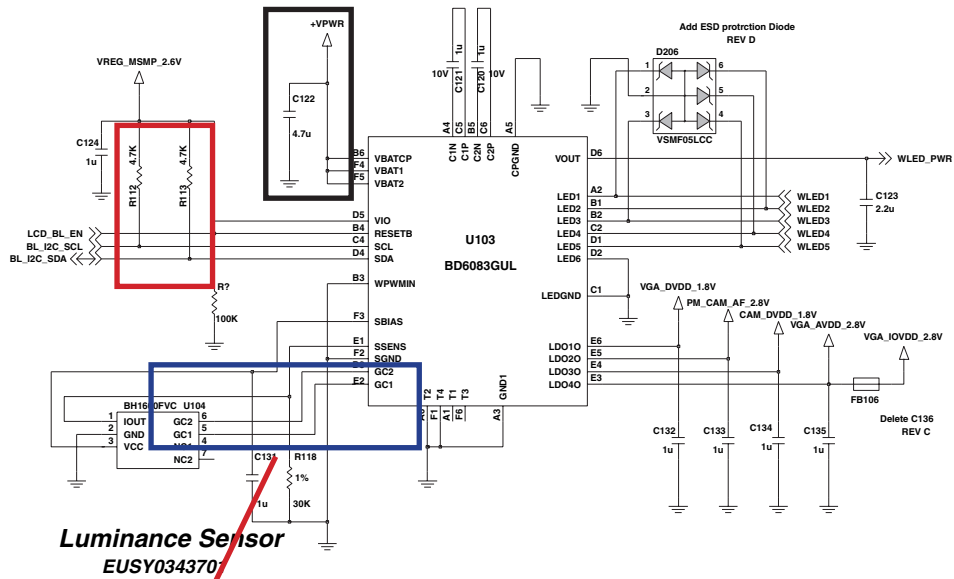




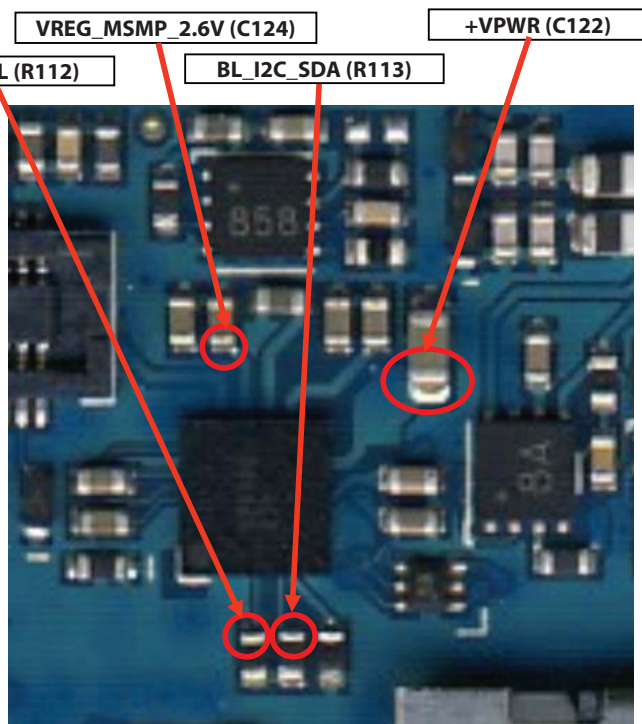
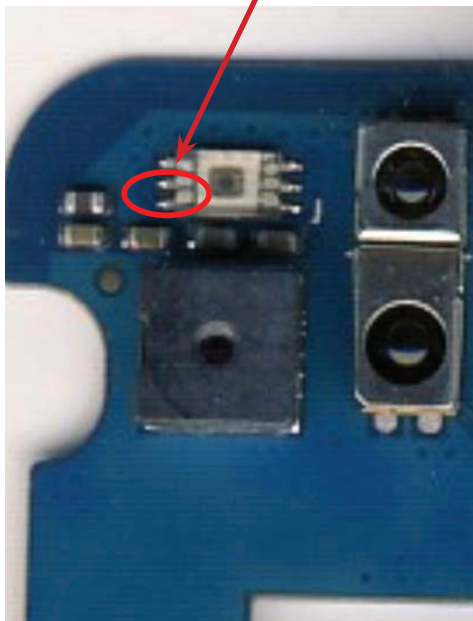
## 4. TROUBLE SHOOTING

### 1) Measurement : Sub-U103

- +VPWR : 4V (C122)
- VREG\_MSMP\_2.6V : 2.6V (C124)
- BL\_I2C\_SDA / SCL : data / CLK pulse (R112, R113)
- U104 (GC1 / GC2) : data pulse



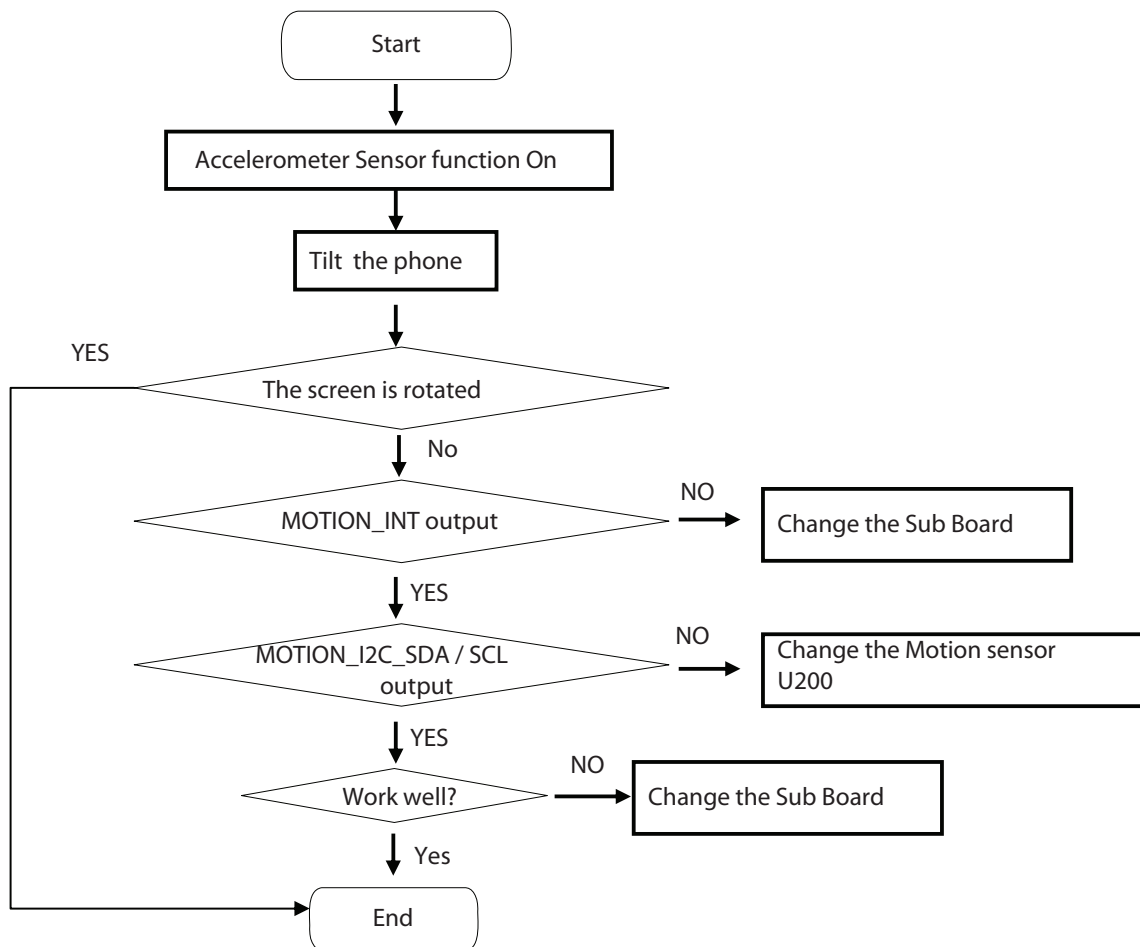
**Luminance Sensor**  
EUSY034370



### 4.19 Motion Sensor on/off trouble

Motion Sensor is worked as below :

Accelerometer Sensor function On → Tilt the phone (90°) → The screen is had rotated automatically.

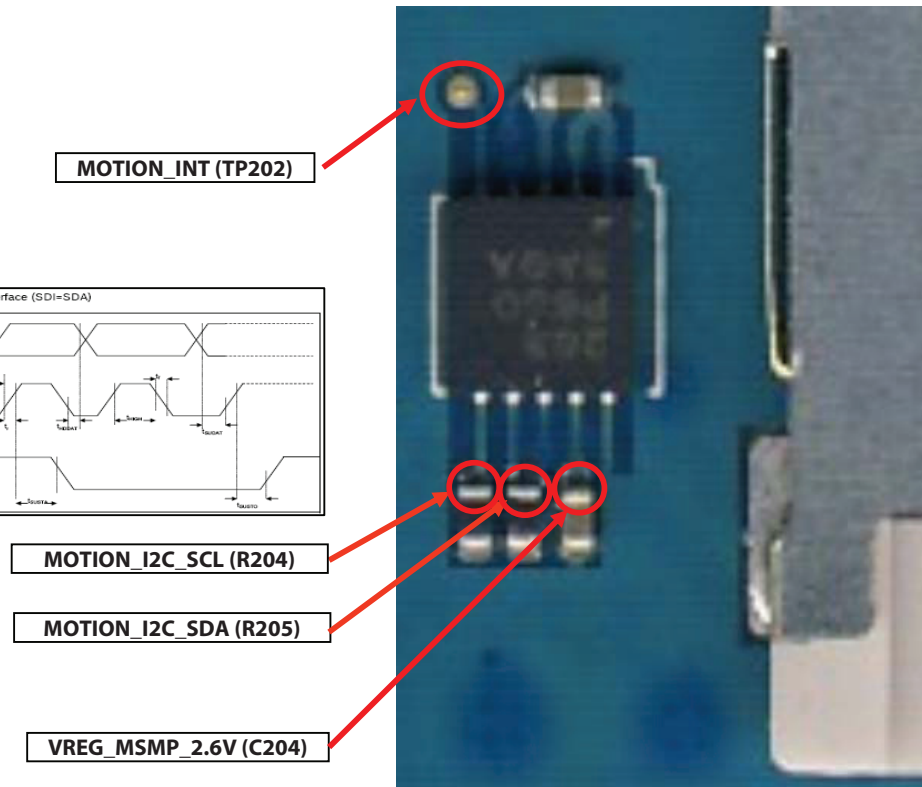
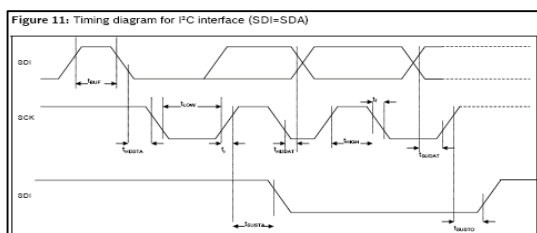
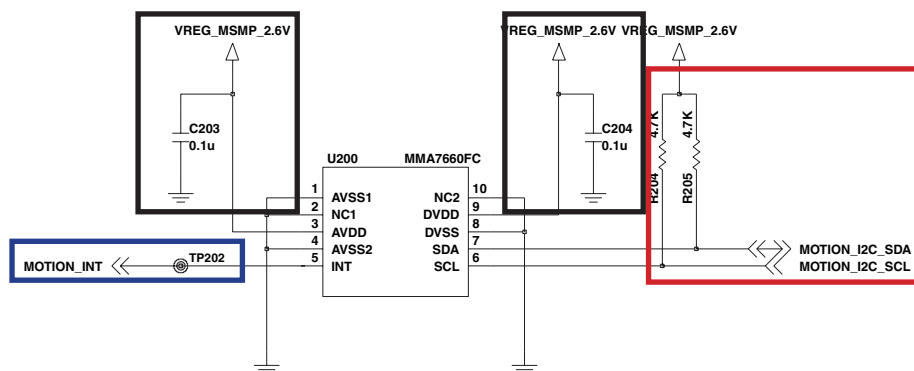


- 1) Measurement : Sub-U200
  - . VREG\_MSMP\_2.6V : 2.6V (C203, C204)
  - . MOTION\_INT : High enable (TP202)
  - . MOTION\_I2C\_SDA / SCL : data / CLK pulse (R204, R205)

## ***Motion Sensor***

***EUSY0378301***

**Rev.B, BMA150(EUSY0345201) -> EUSY0378301**



## 5. Downloading

### 5.1 Introduction

LGMDP is a LGE application that allows users to download images from PC to handset. LGMDP is a download tool with capabilities to upload image files to the handset. LGMDP is designed to be simple to use and easy enough for the beginner to upload executable images to the handset. LGMDP supports Windows 2000/XP where the LG SP USB modem driver (Ver. 2.0 or later) is installed. Additionally, LGMDP allows multi downloading up to 16 handsets at the same time.

- GM730/GM735 does NOT use LG USB driver but LG SP USB driver. LG SP USB driver is used for only smart phone which is based on Windows Mobile OS.

## 5. Downloading

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### 5.2 Downloading Procedure

- To download images to the phone using LGMDP, the phone should be turned off.
- And connect USB cable with PC and connect it to the phone with “both of the Volume keys” pressed at the same time. Then, ‘Emergency download’ image is displayed and LED becomes green.
- Now, the phone is ready to communicate with LGMDP to download images.



### 5.2 Downloading Procedure

- If the phone is not booted properly, user can use emergency mode and download image files
- Reboot the phone in the emergency mode (Turn off the phone and turn on again with “Volume down + Lock key” pressed) and then try to download all the images.
- The phone supports a special mode called emergency mode in which minimum units for downloading is running so that users can download the images in emergency situation.



## 5. Downloading

### 5.2.1 Before downloading

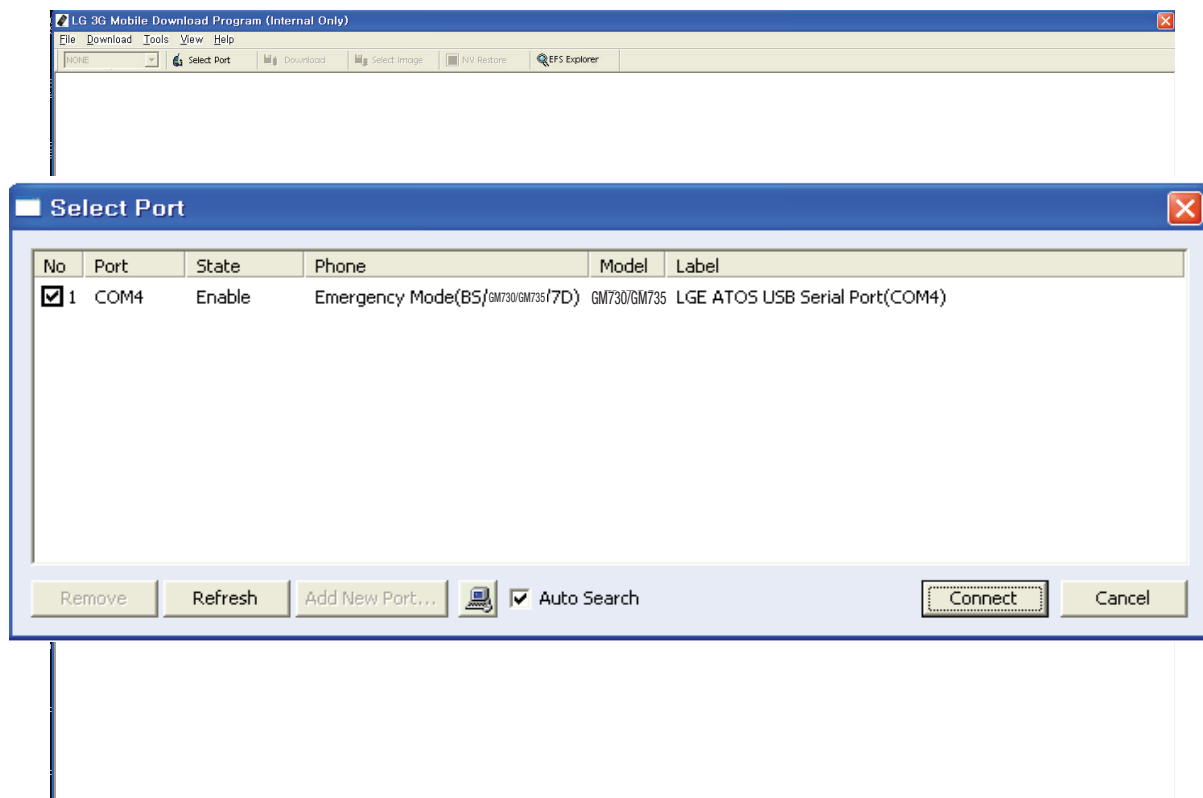
#### - Caution -

LGMDP does not support backup functionality of all the user data saved in the phone. Once new SW images are downloaded to the phone, all the user data will be erased and the user can not restore them. Therefore, users have to backup all the user data(Contacts list, pictures, SMS list, or mp3 files, etc.) in the phone using another backup tool before downloading.

### 5.2.2 Connecting to PC

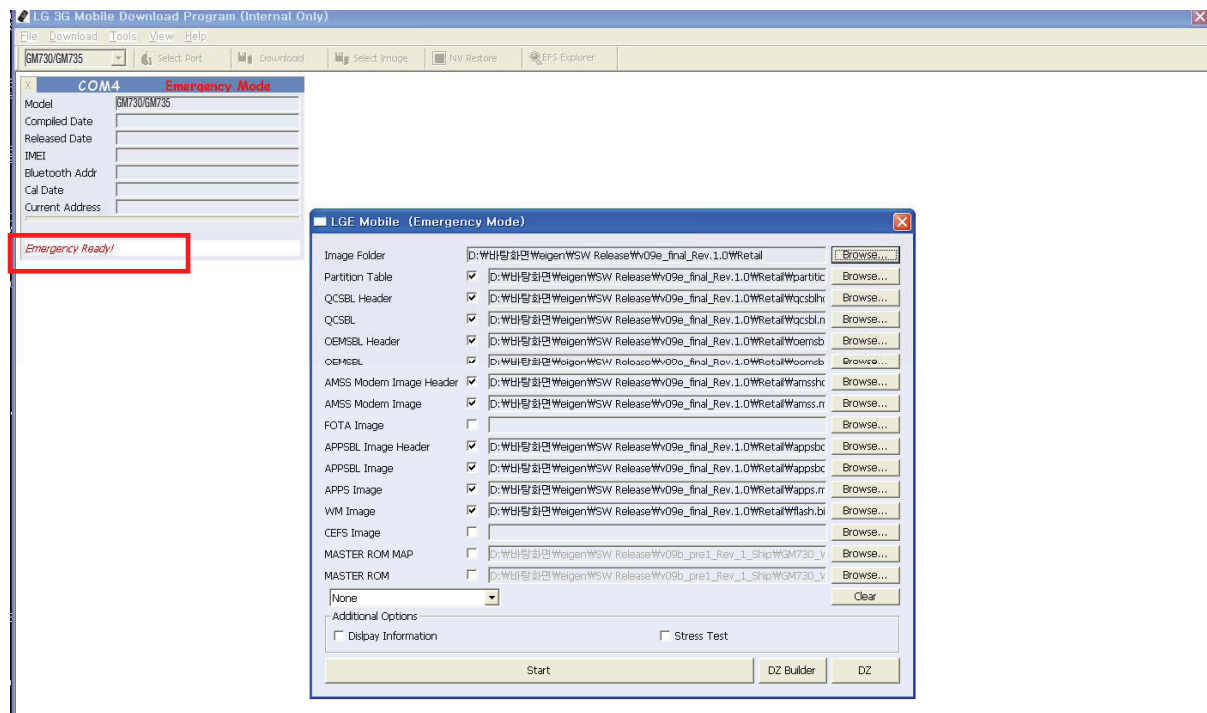
- Run the LGMDP application, click on the Select Port and then Select Port window will be pop up. Check if state shows Enable for the port to be connected for downloading images. Then click on the Connect button.

(The port number(COM4) might be different )



## 5. Downloading

- The status Ready is displayed and the window from which user can choose the image files to be downloaded to the phone is showed up.



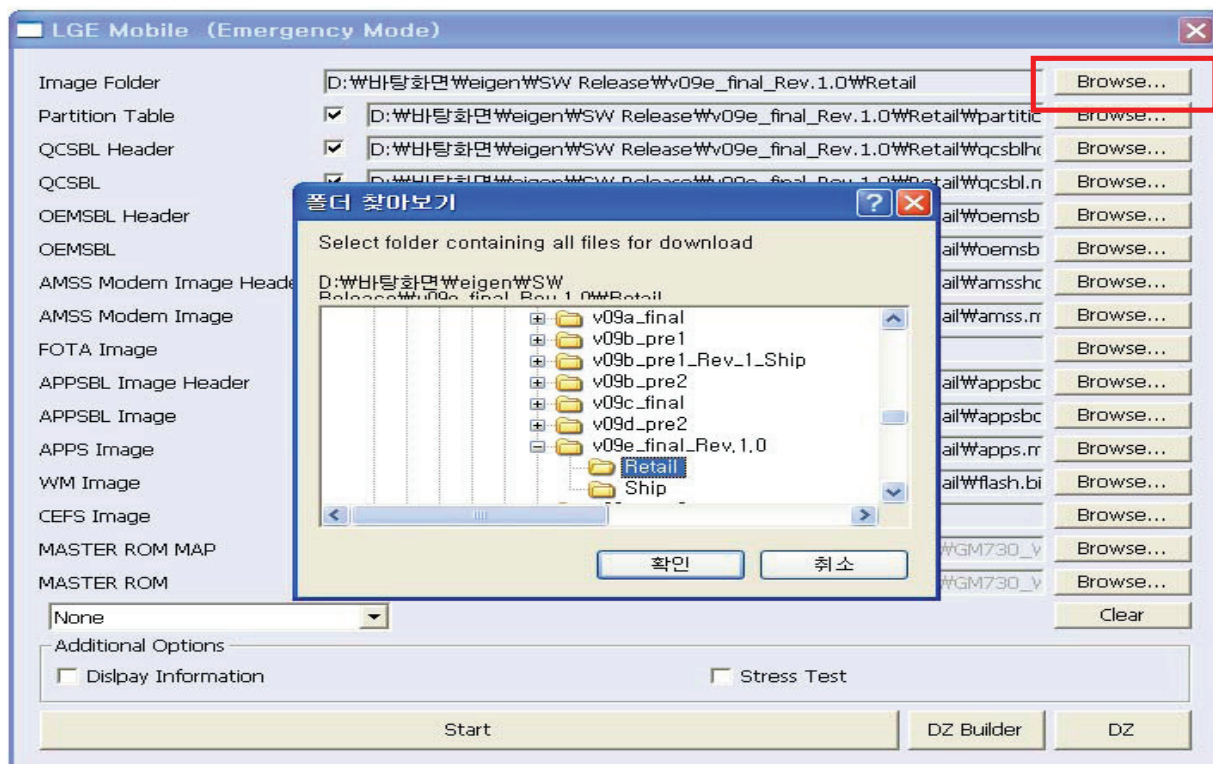


## 5. Downloading

### 5.2.3 Choosing image files

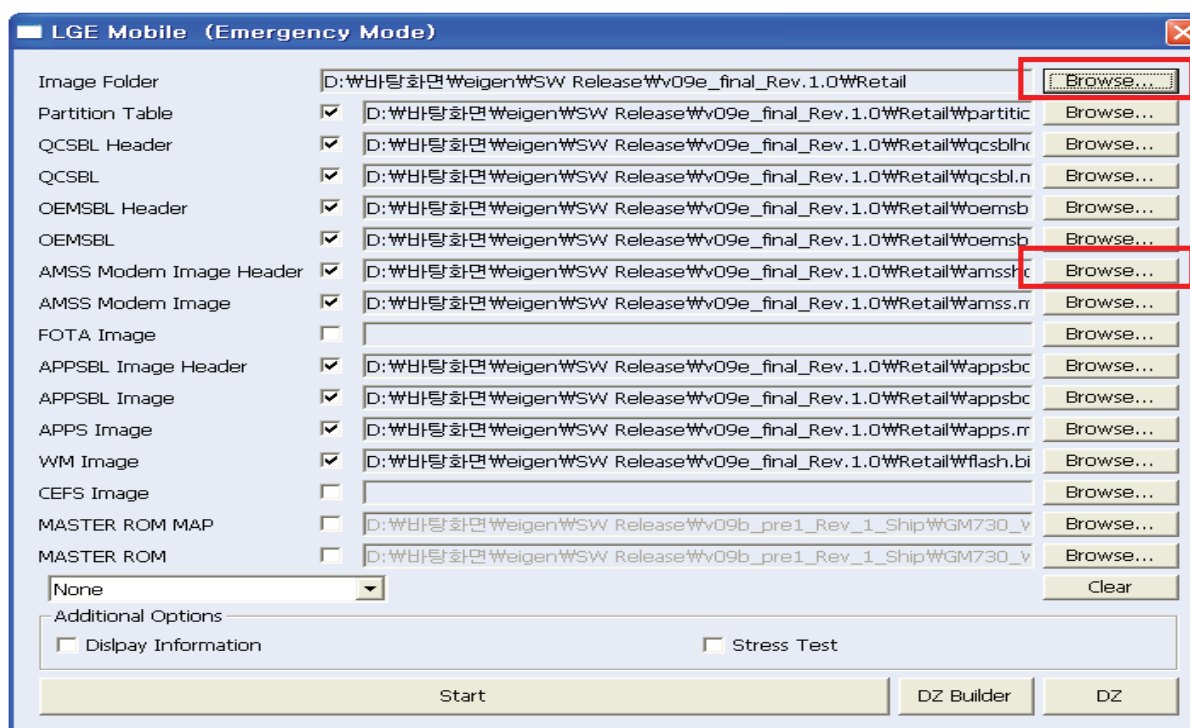
- Select the image folder, where all the image files are located, by clicking on the Browse... , then LG-MDP automatically loads images of the folder accordingly.

(The folder name shall be different from that of the folder name in the snapshot. The folder name indicates the path where the image files are located.)



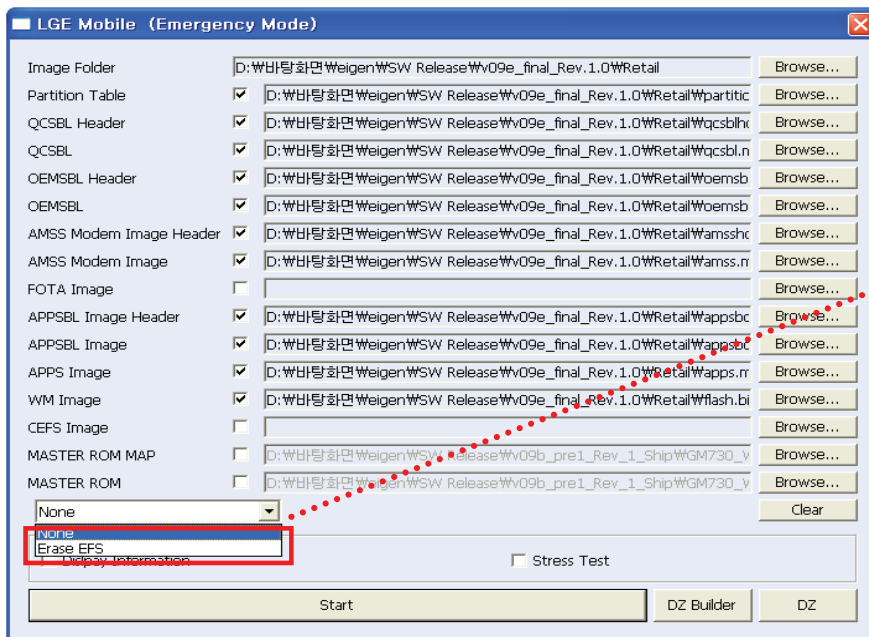
## 5. Downloading

- Also you can select images by manually. For instance, select the path of AMSS Modem Image file by clicking on the Browse... button. The selected AMSS image will be downloaded to the phone from the path directory in the PC. This method, however, is not recommended since user can make mistake to choose wrong image file. The phone in which wrong image file is downloaded might not be working.



## 5. Downloading

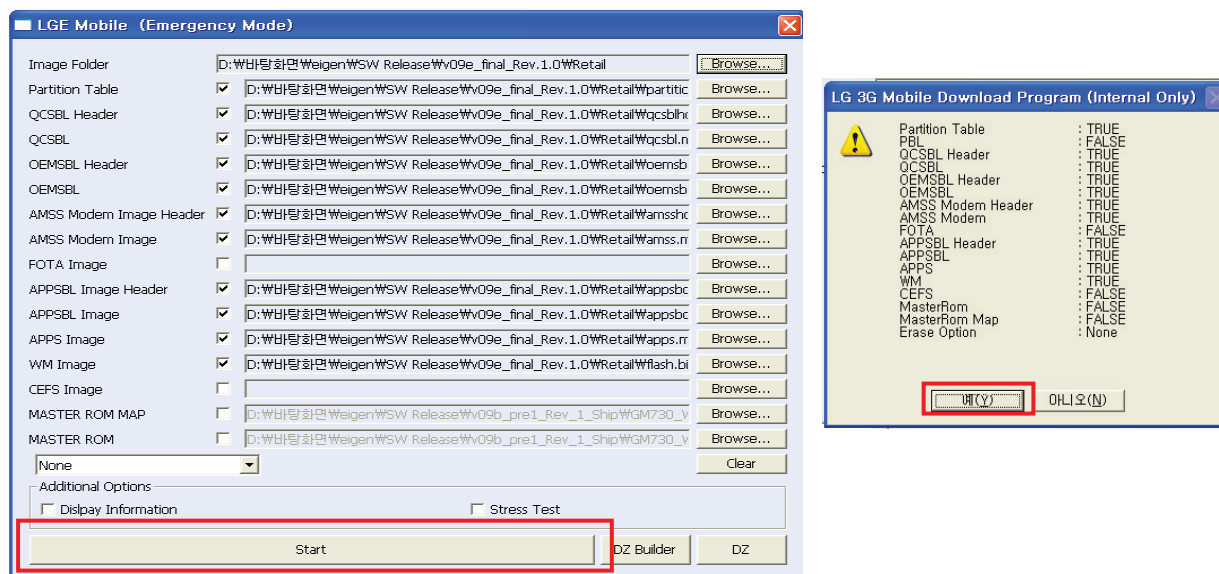
- When you pull down the default option menu 'Reset Database & Contents', you can see the option 'Erase EFS'. If you choose 'Erase EFS', all the preset environment values or calibration data will be erased. It is recommended that you never choose this option menu. Just leave it as default value(Reset Database & Contents).



**Don't choose  
Erase EFS!**

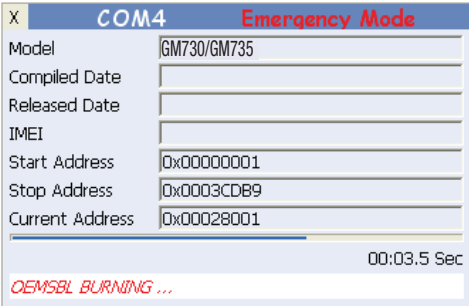
## 5. Downloading

- If connecting phone with PC, choosing image files and setting option are finished, the only action remained is to click Start button to start downloading. Once you click it, a summary of the selected image files and option information window will be displayed. Just click Yes button, then downloading process is started.

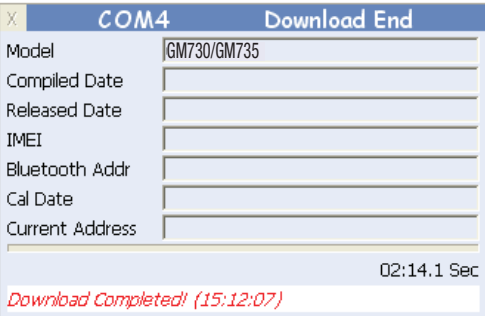


# 5. Downloading

## 5.2.4 Downloading



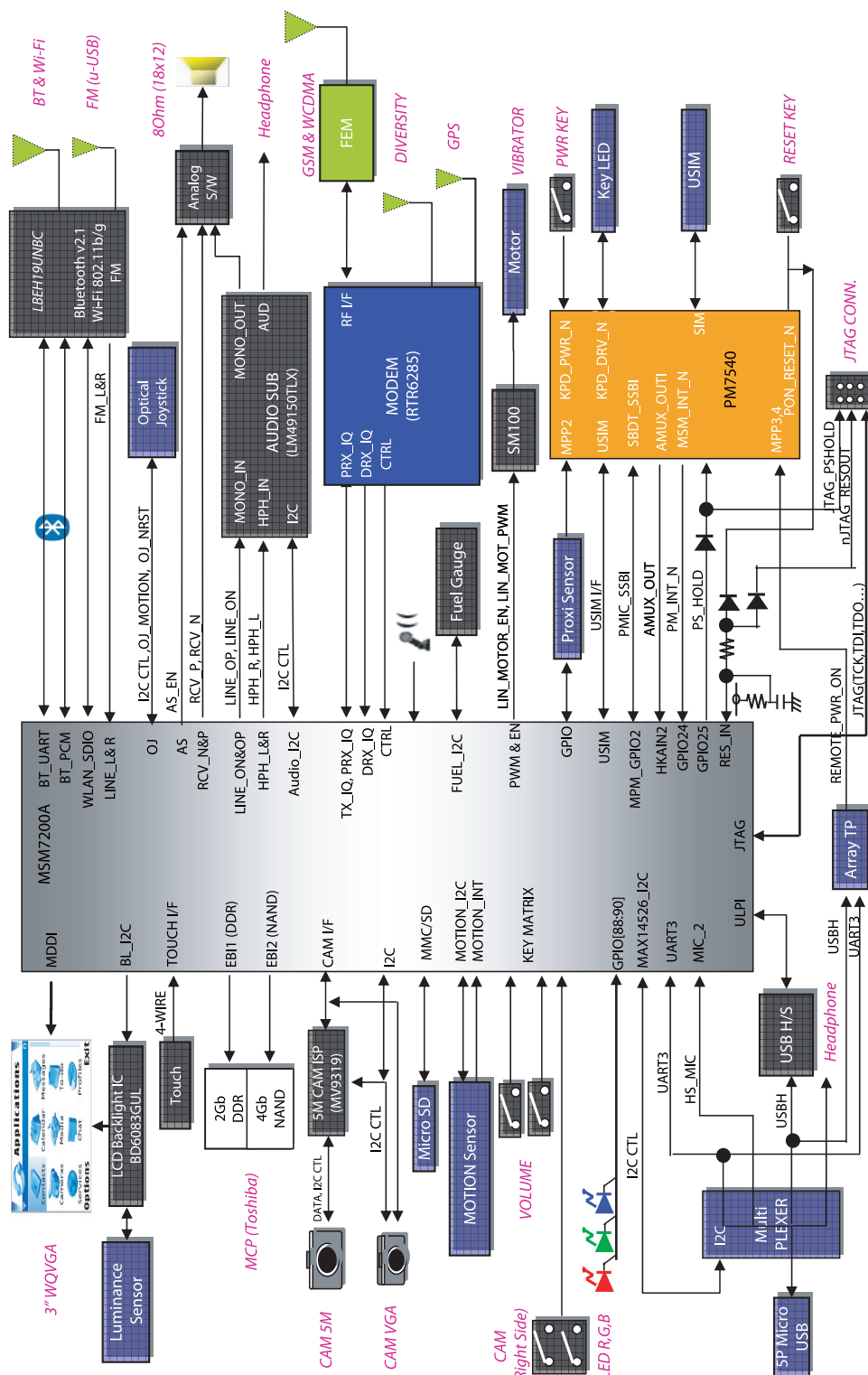
- Downloading all the image files.



- Downloading process completed successfully

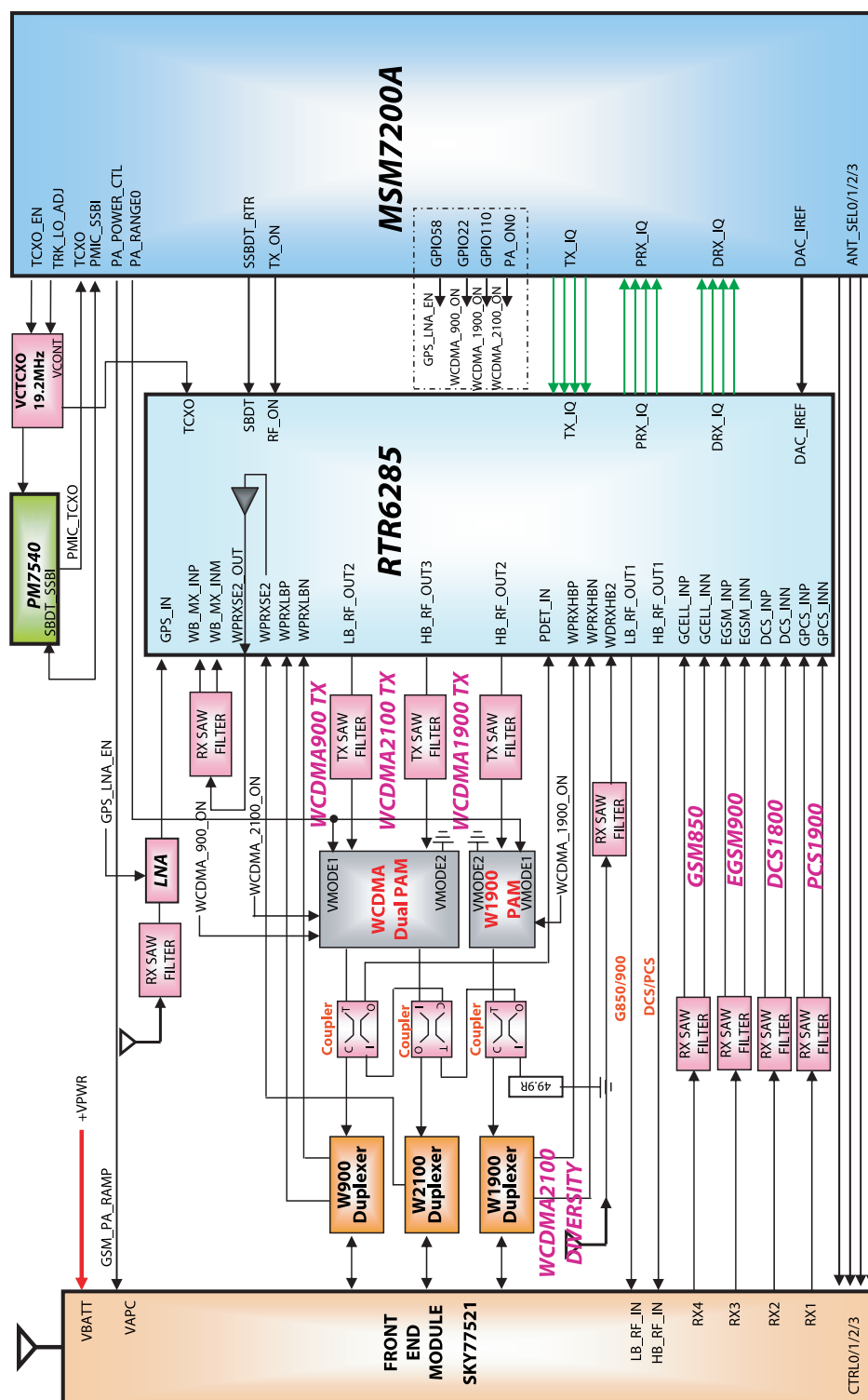
## 6. BLOCK DIAGRAM

## System HW Block Diagram





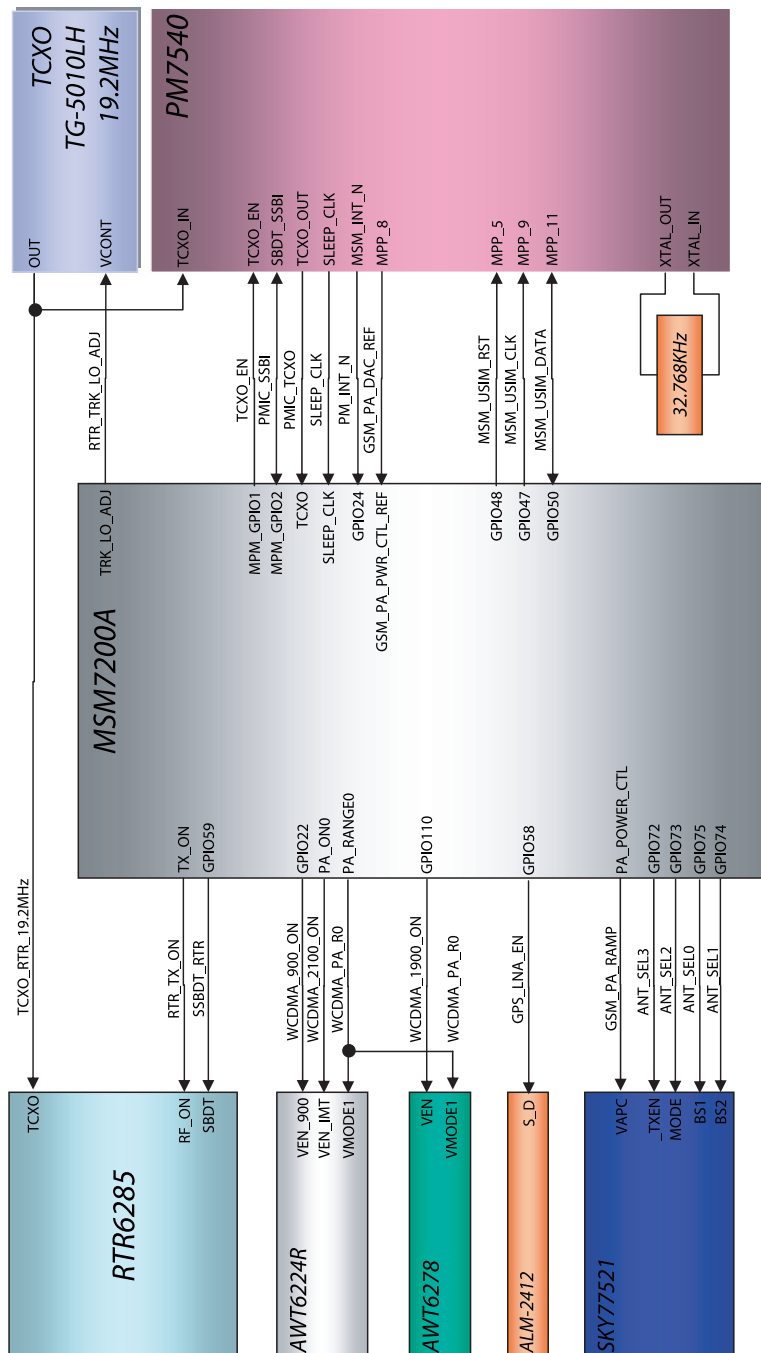
## System HW Block Diagram



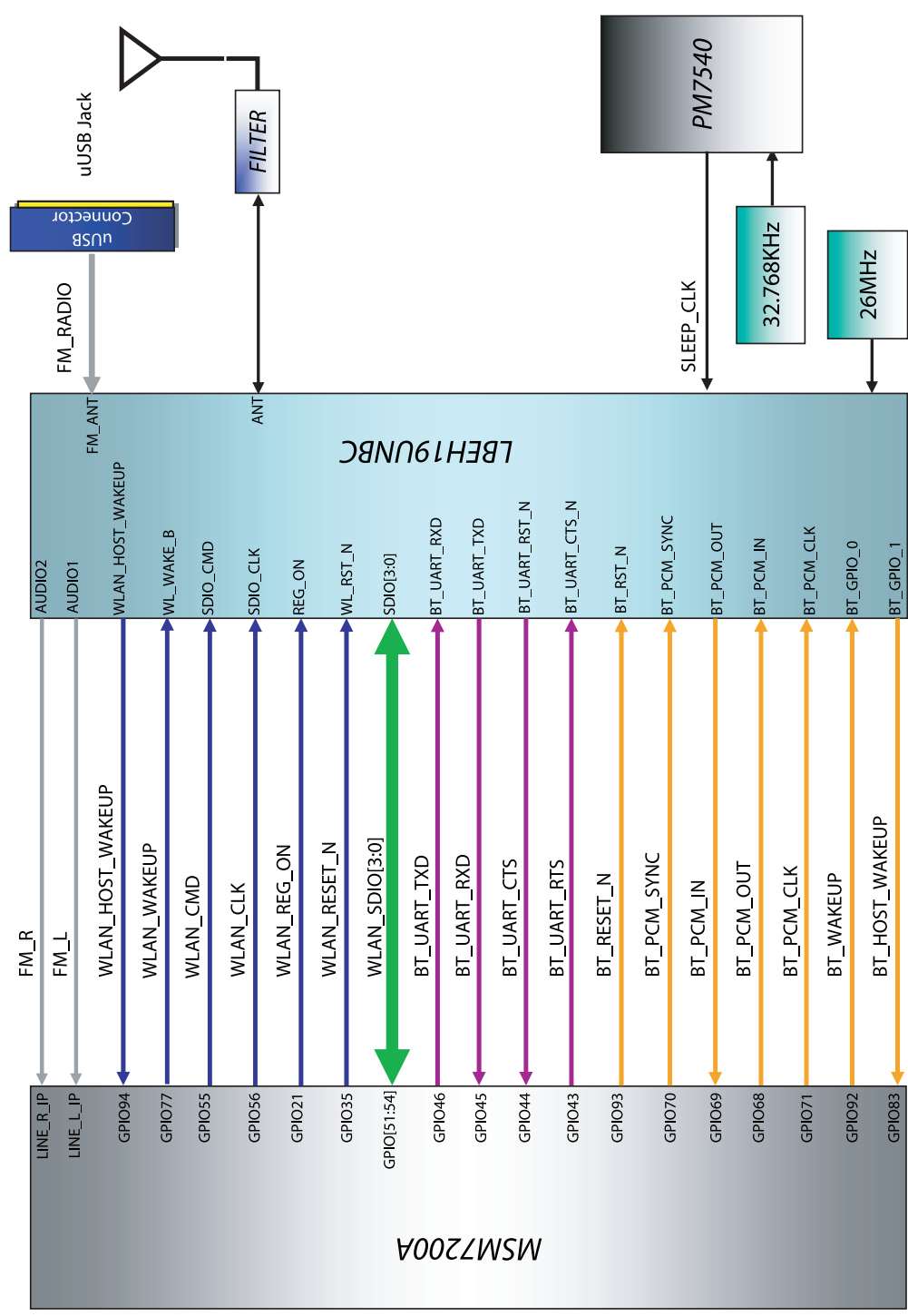


## 6. BLOCK DIAGRAM

### System HW Block Diagram

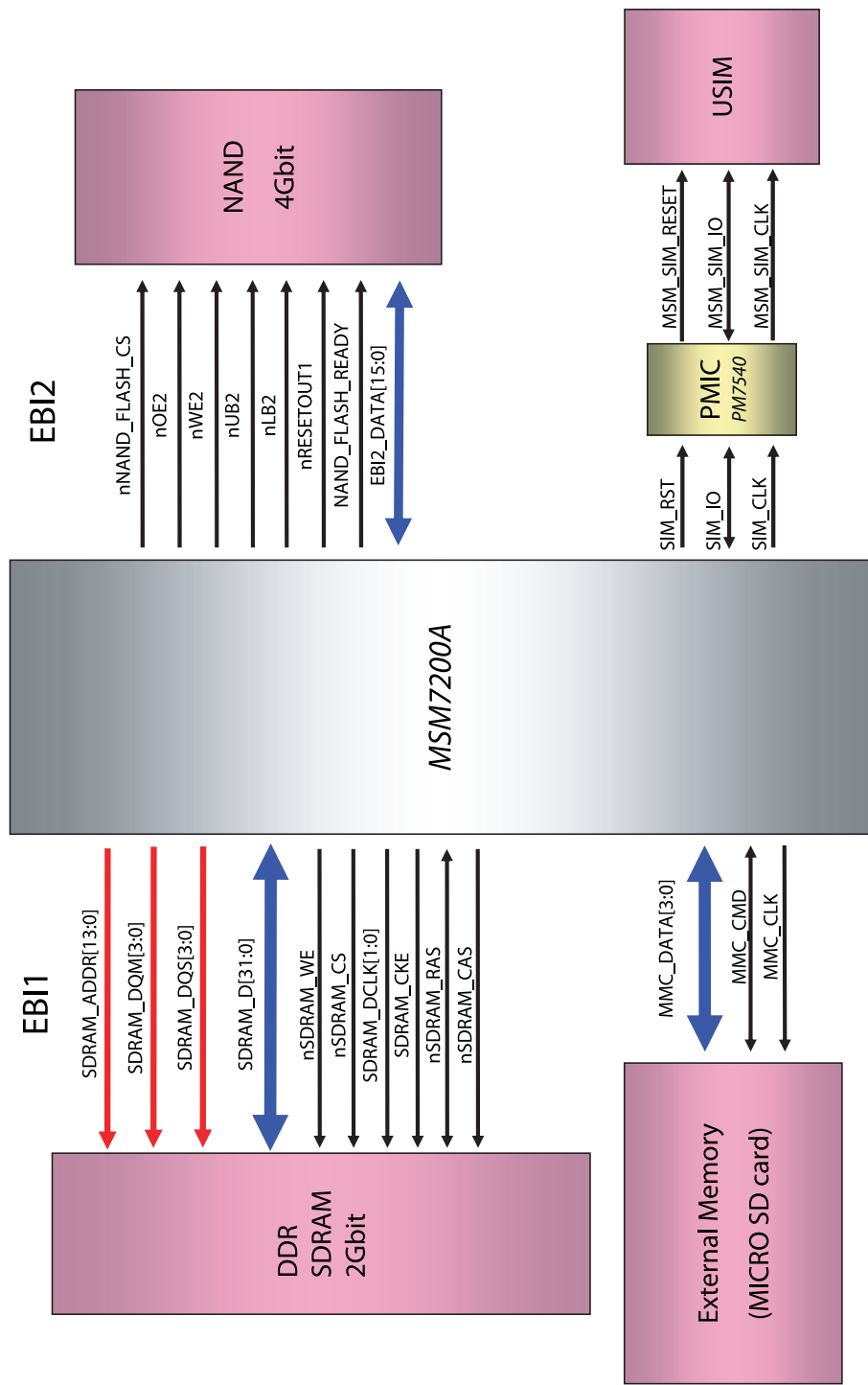


System HW Block Diagram

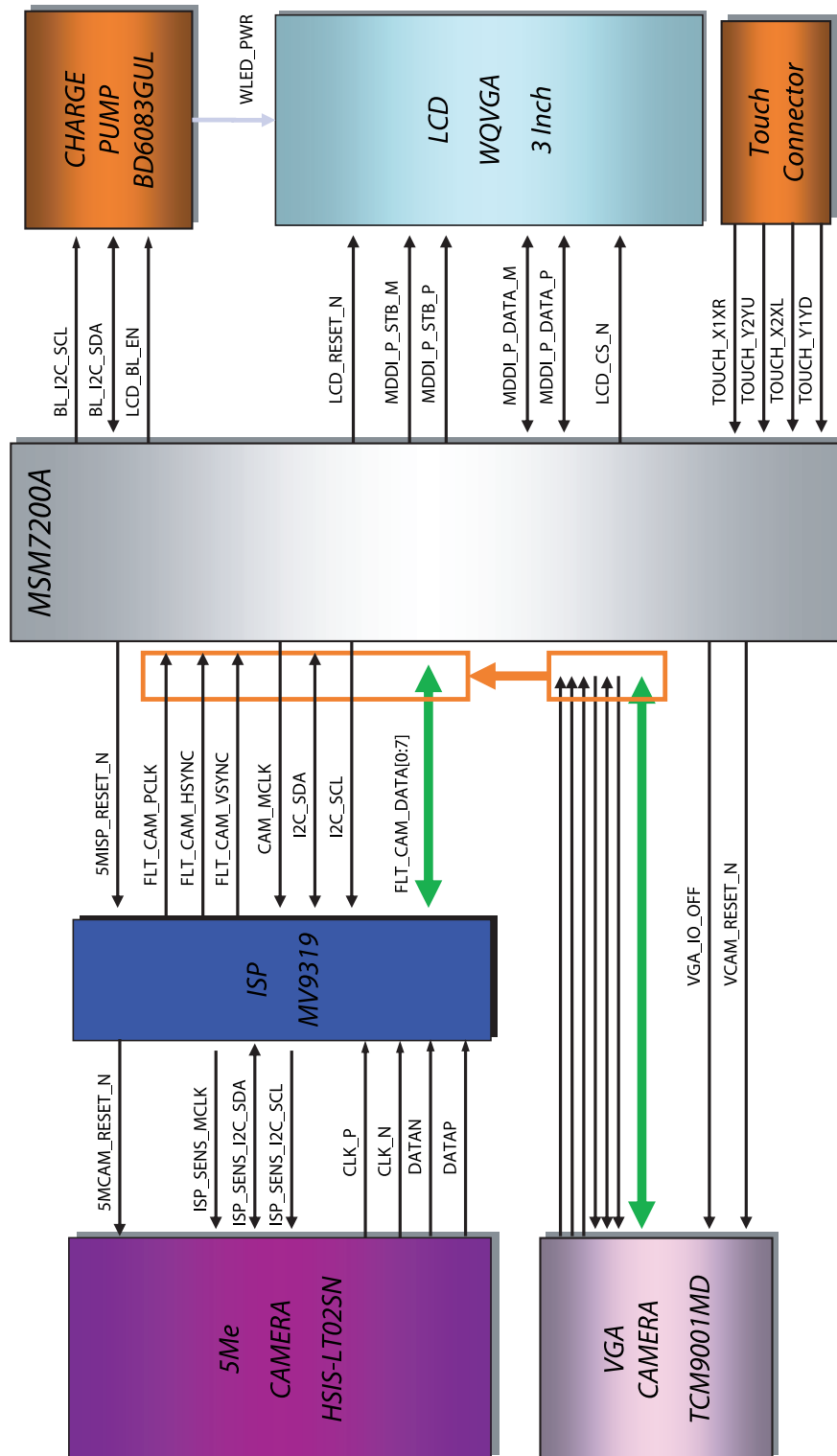


# 6. BLOCK DIAGRAM

## System HW Block Diagram

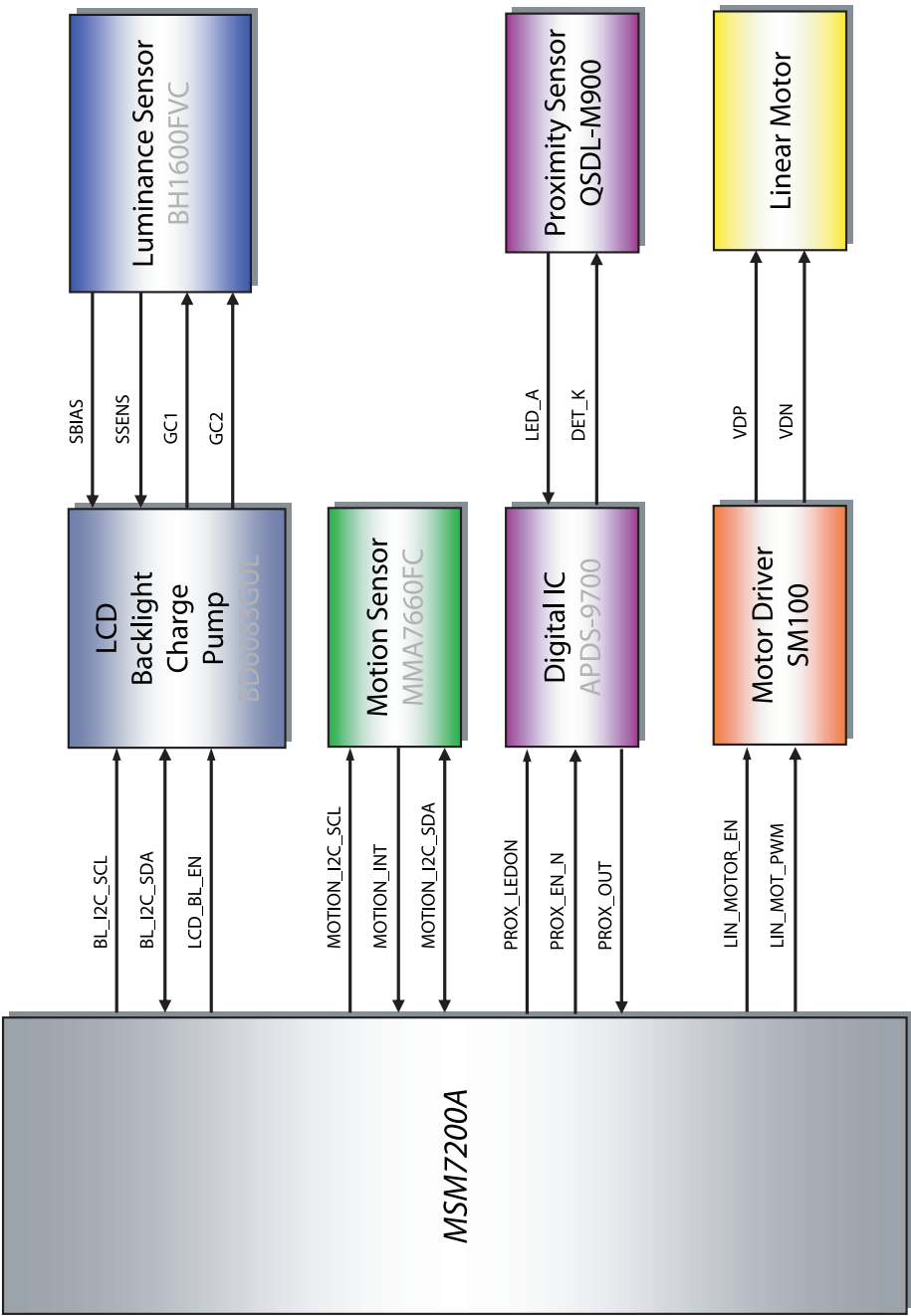


## System HW Block Diagram

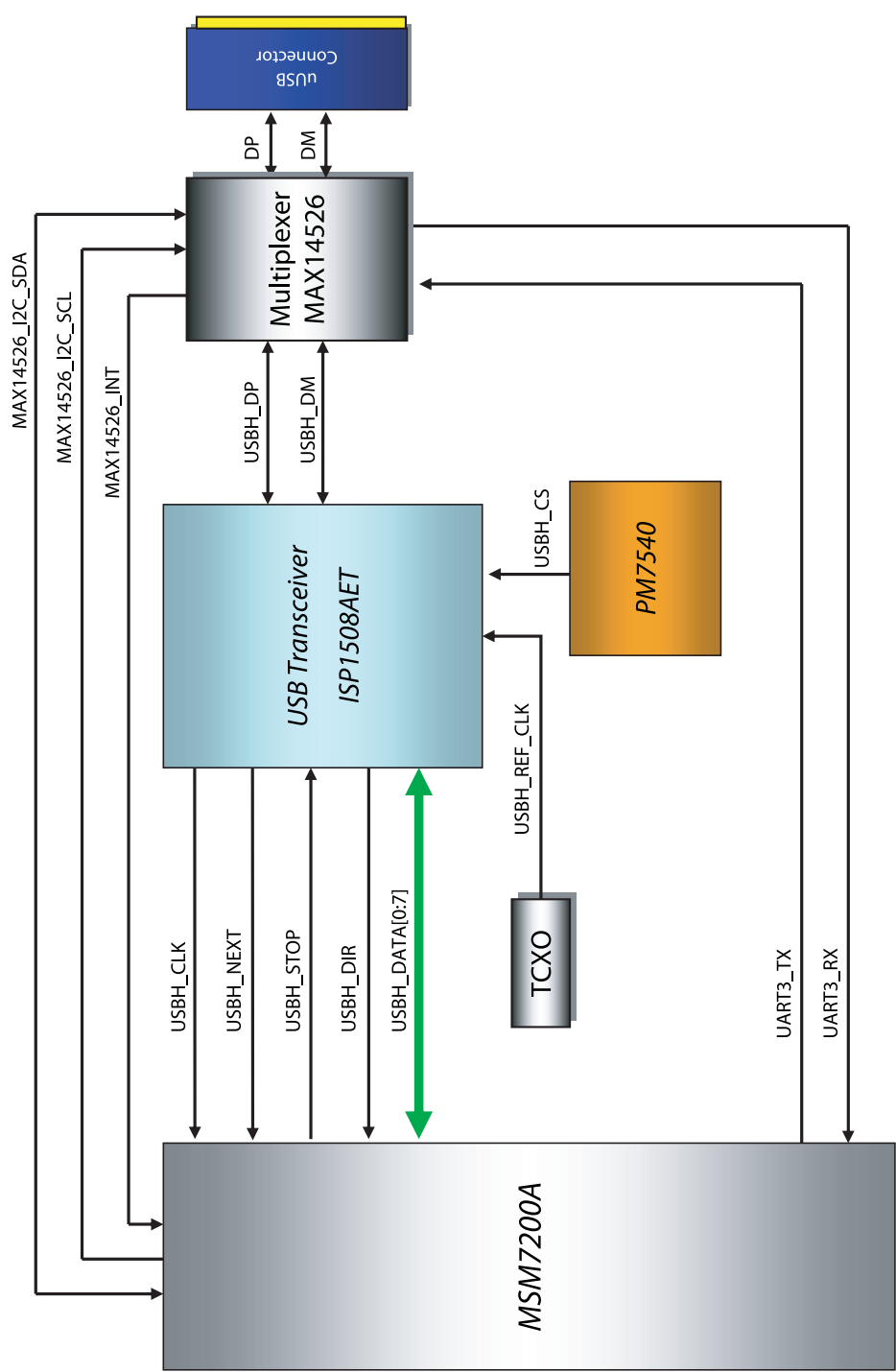


6. BLOCK DIAGRAM

System HW Block Diagram

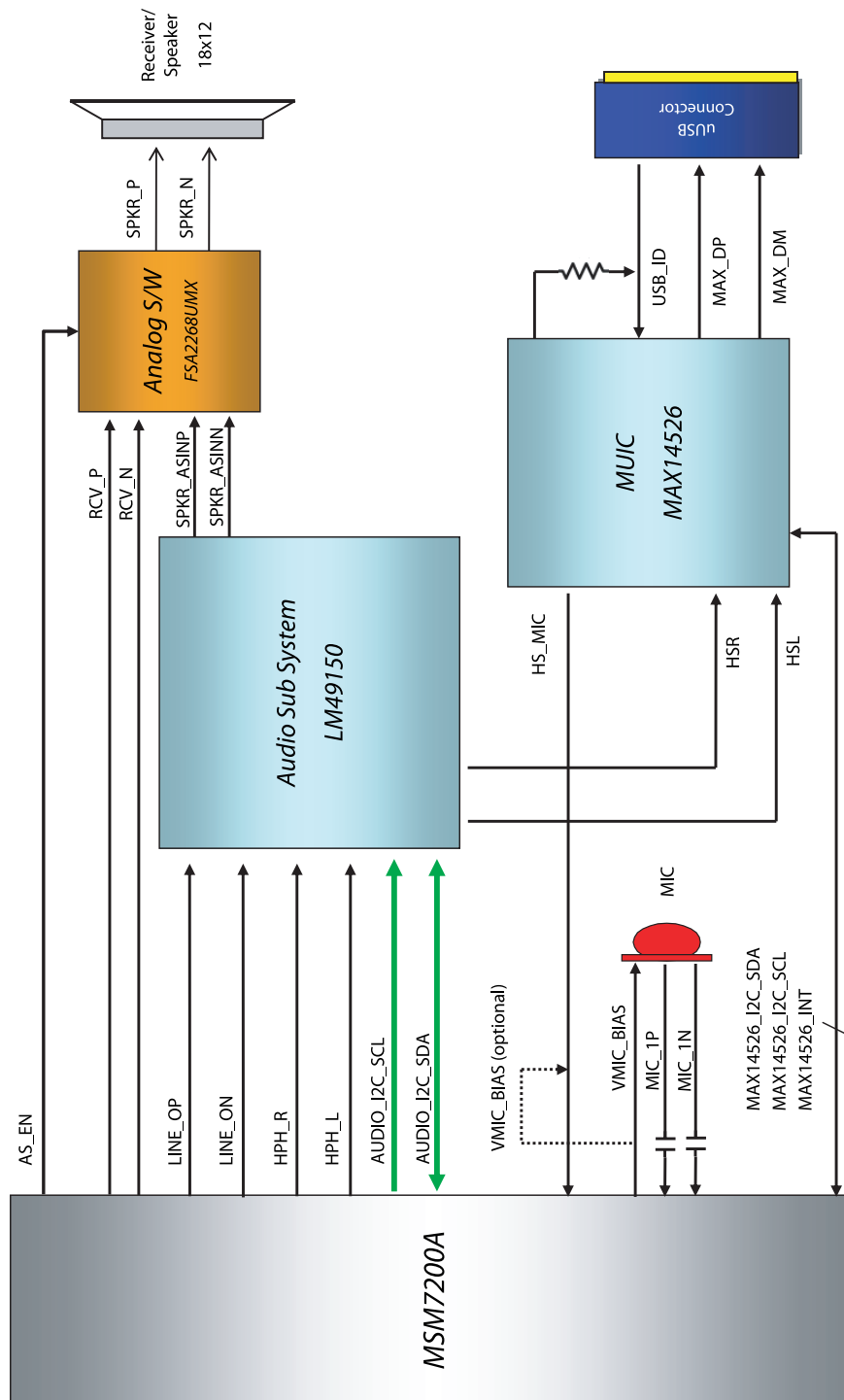


System HW Block Diagram

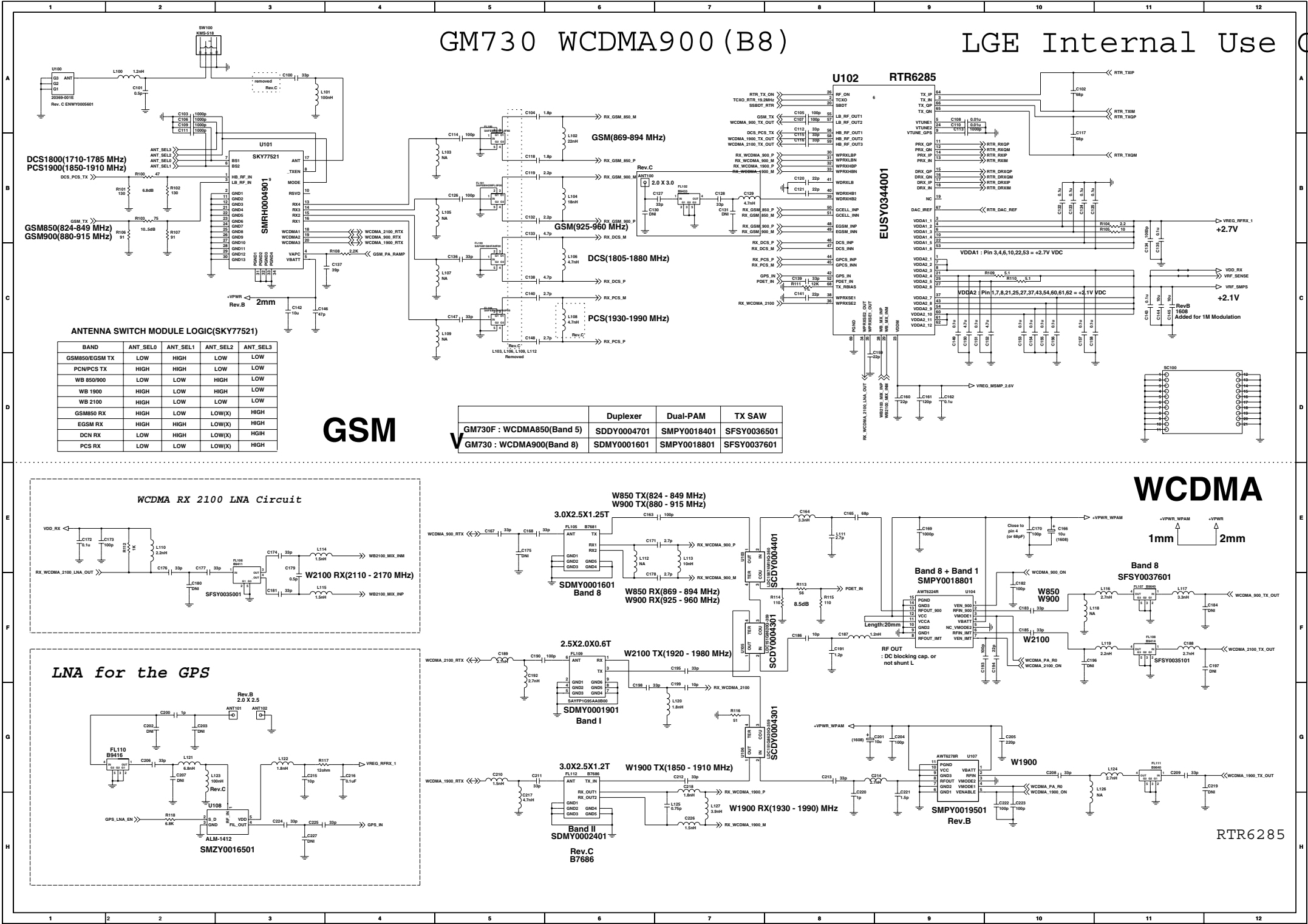


## 6. BLOCK DIAGRAM

### System HW Block Diagram

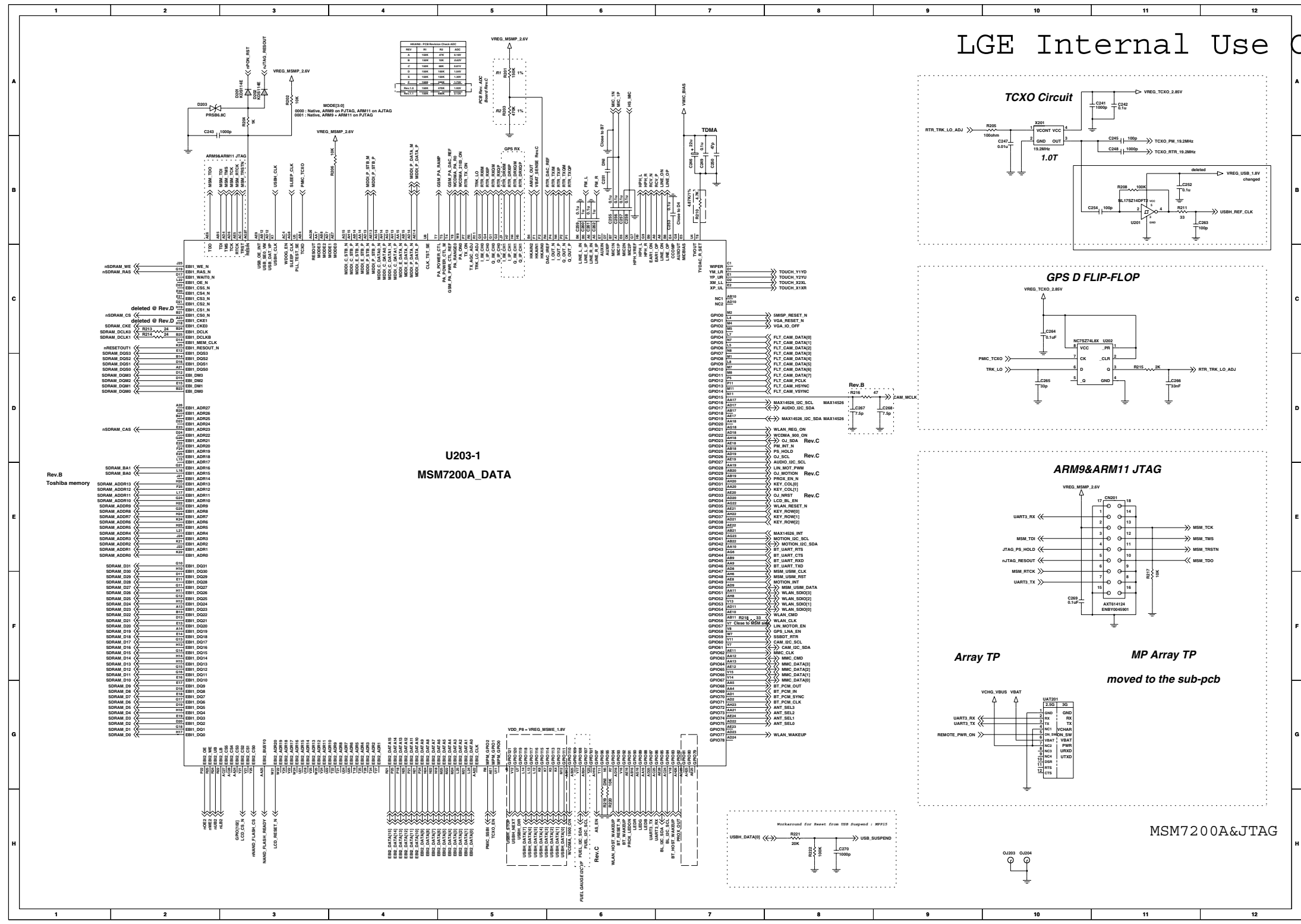


7. CIRCUIT DIAGRAM

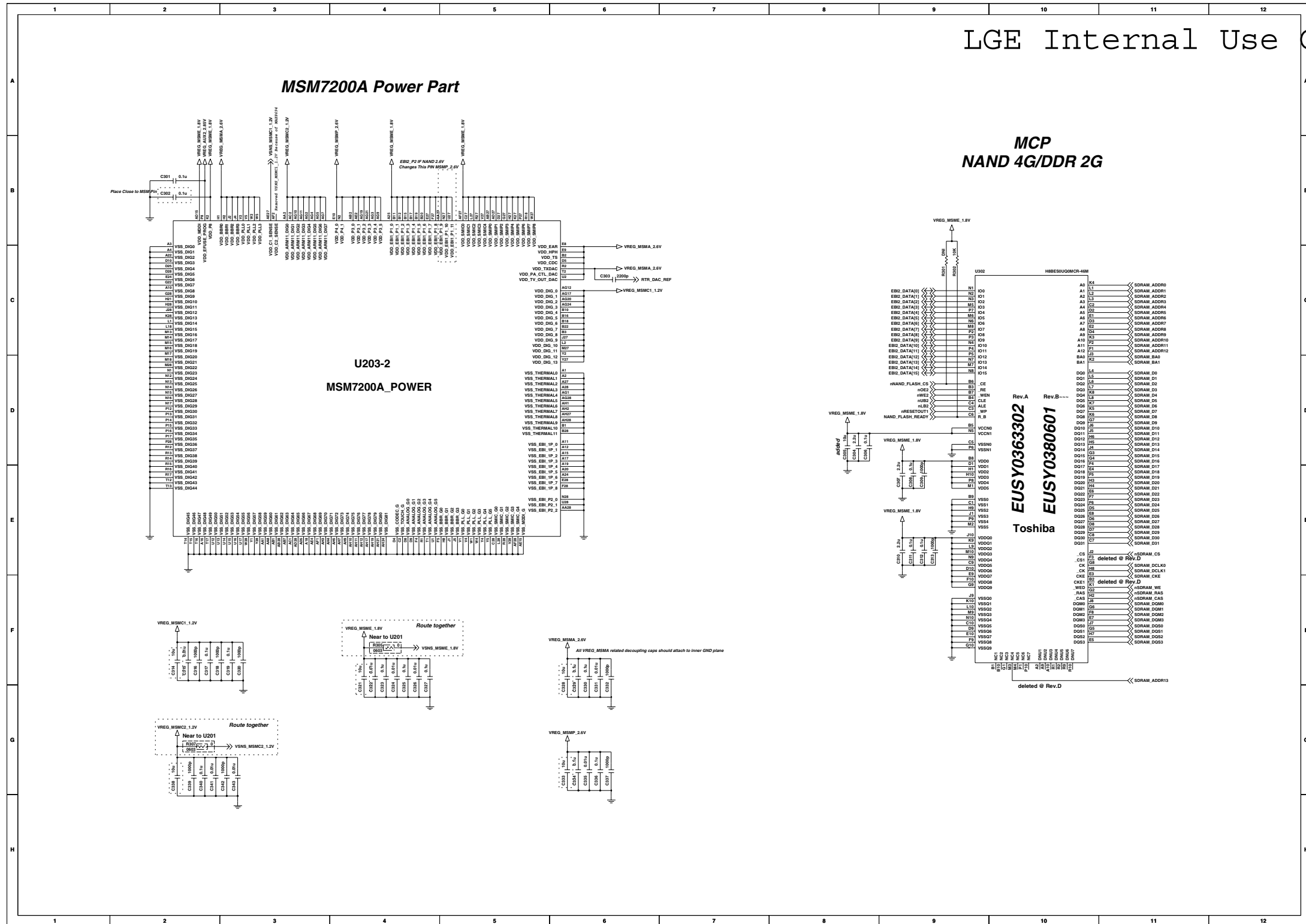




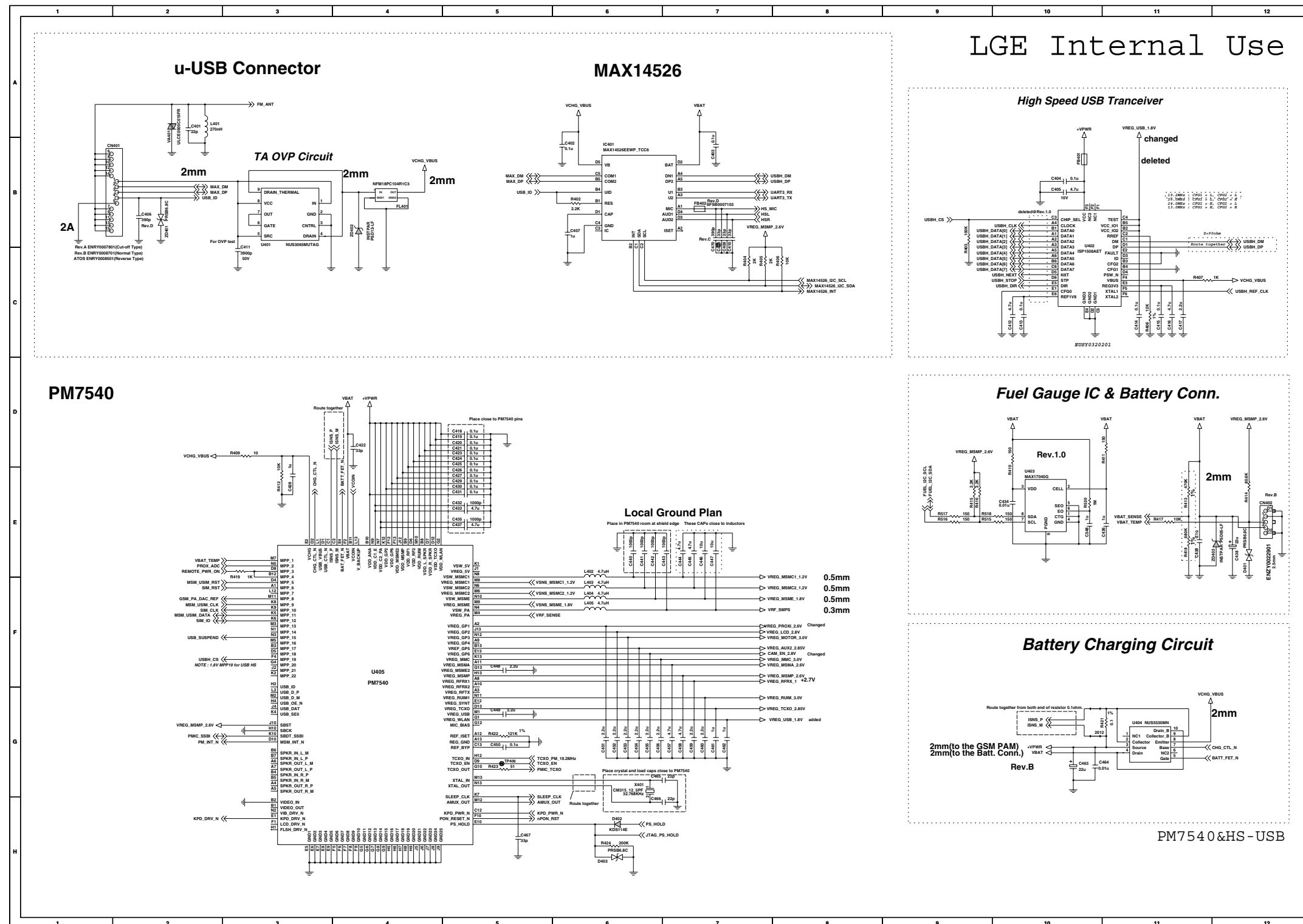
## 7. CIRCUIT DIAGRAM



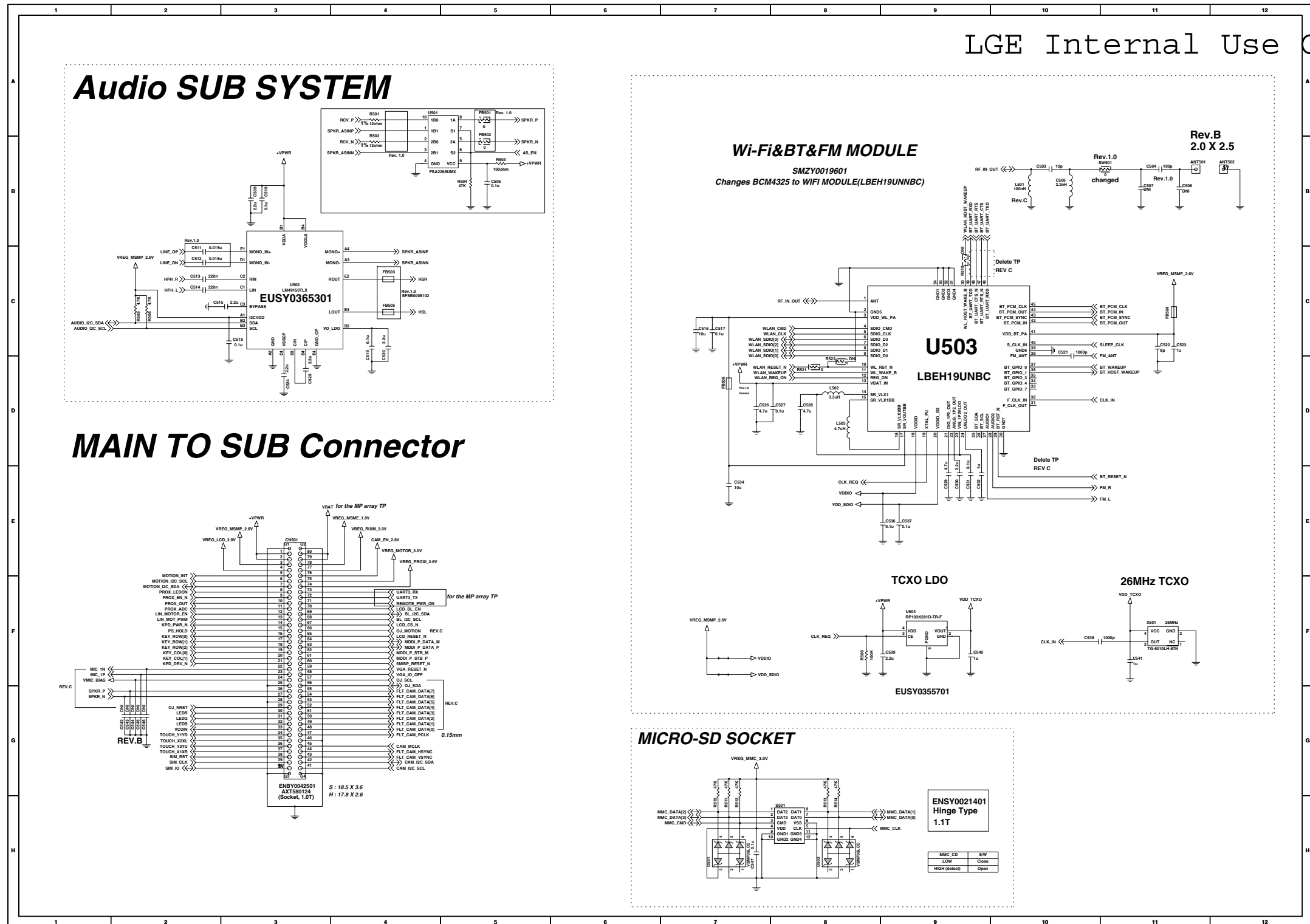
## 7. CIRCUIT DIAGRAM



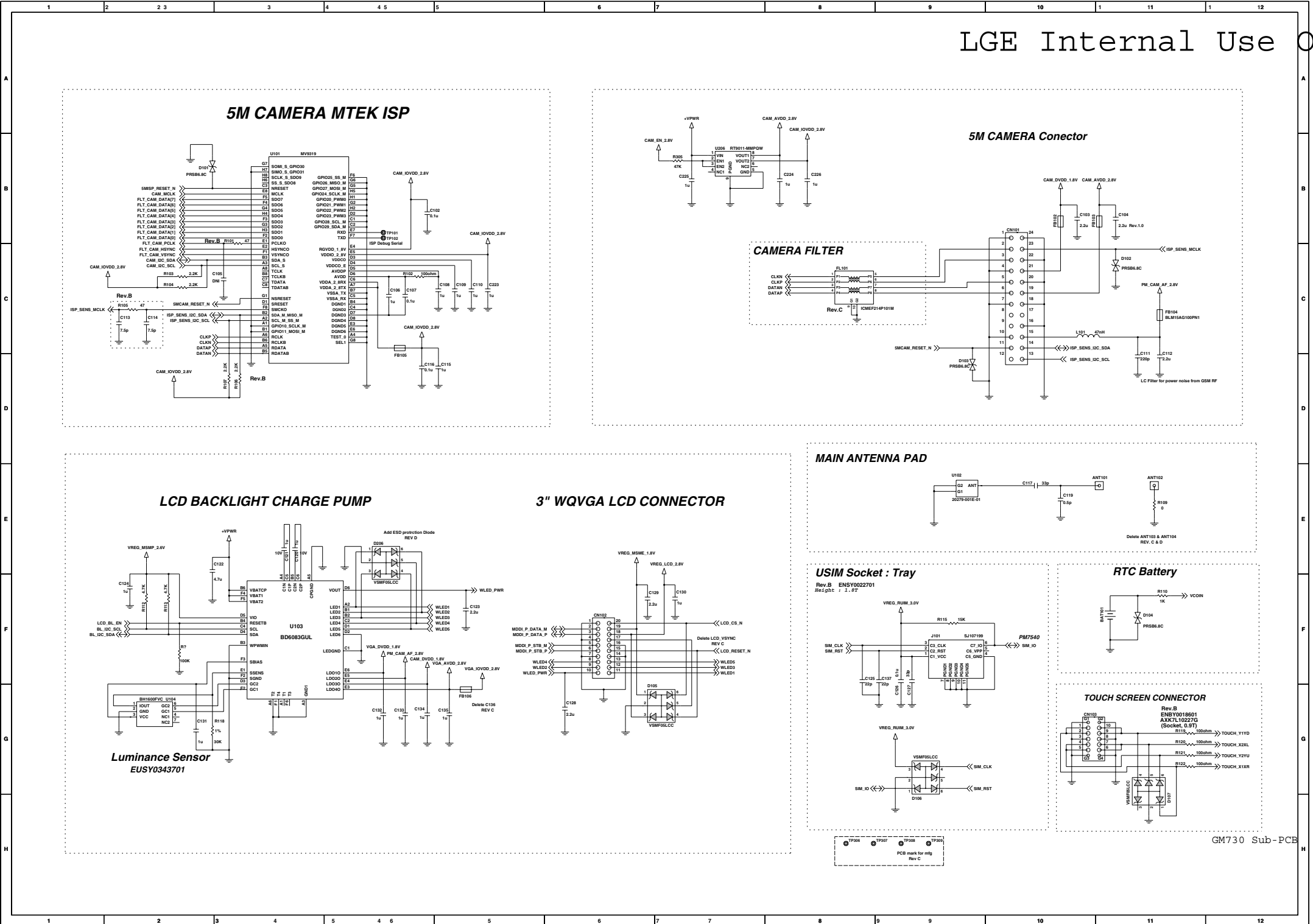
## 7. CIRCUIT DIAGRAM



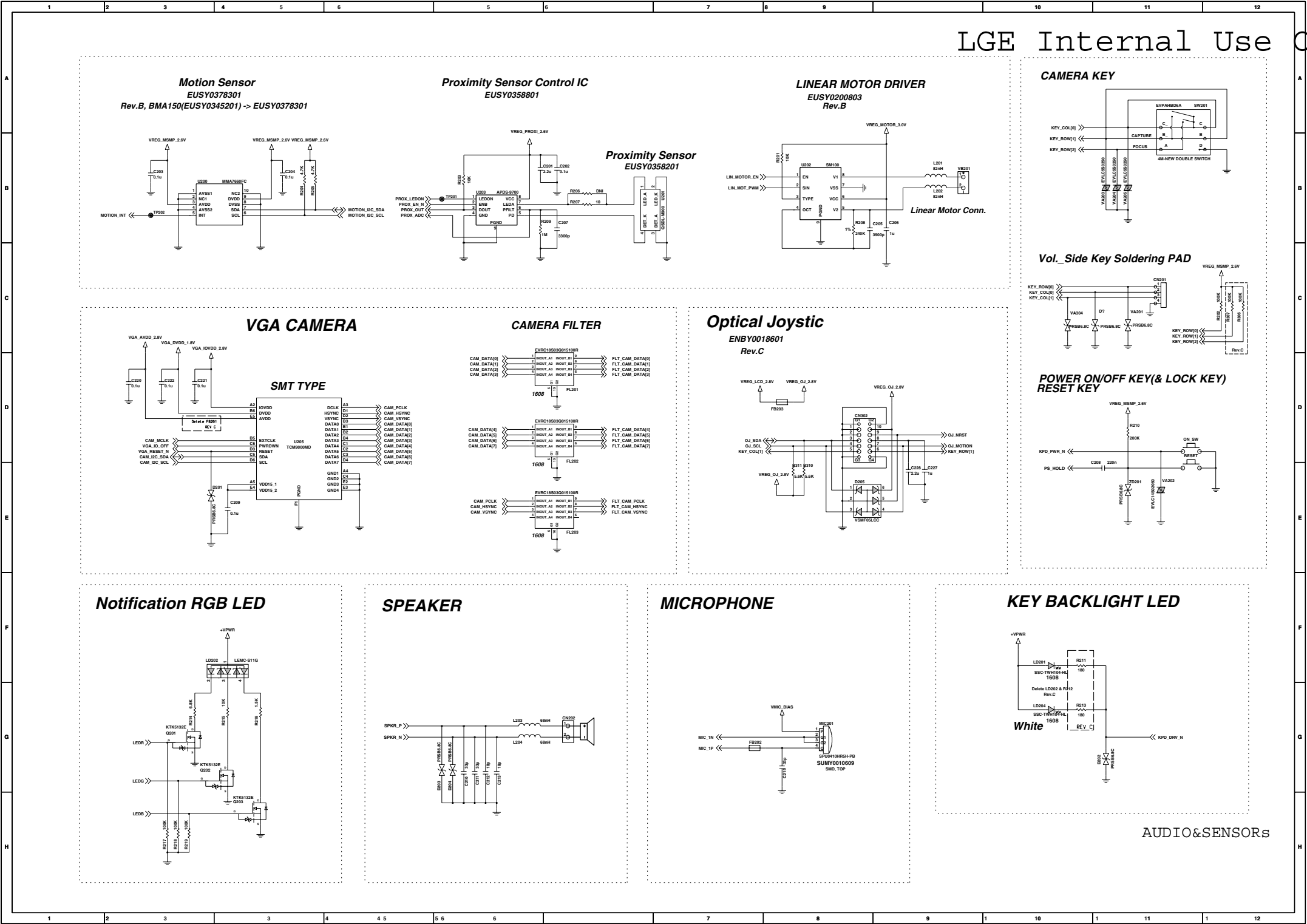
## 7. CIRCUIT DIAGRAM



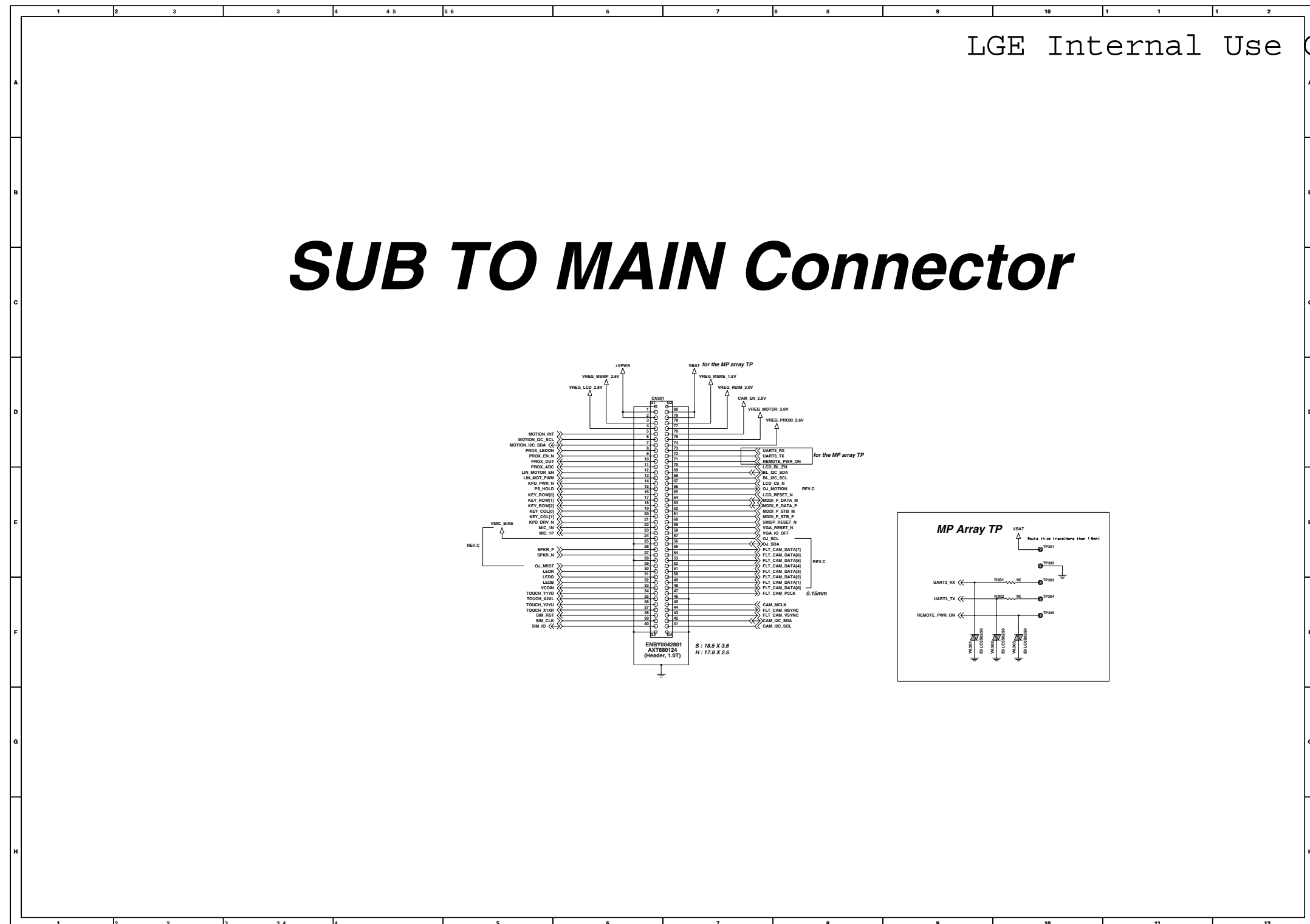
# 7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM



## 7. CIRCUIT DIAGRAM





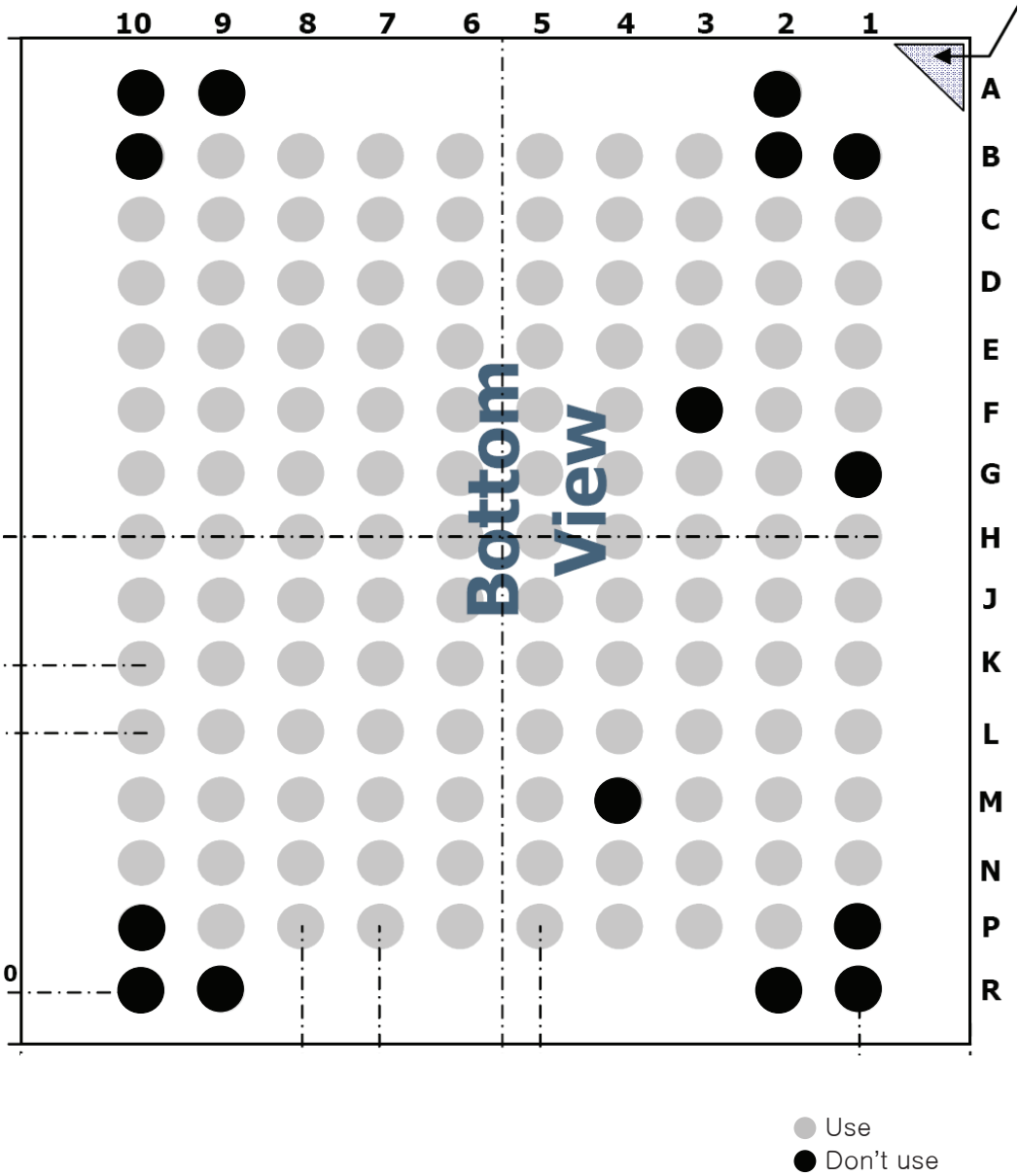
### 1. U203 (EUSY0344203)



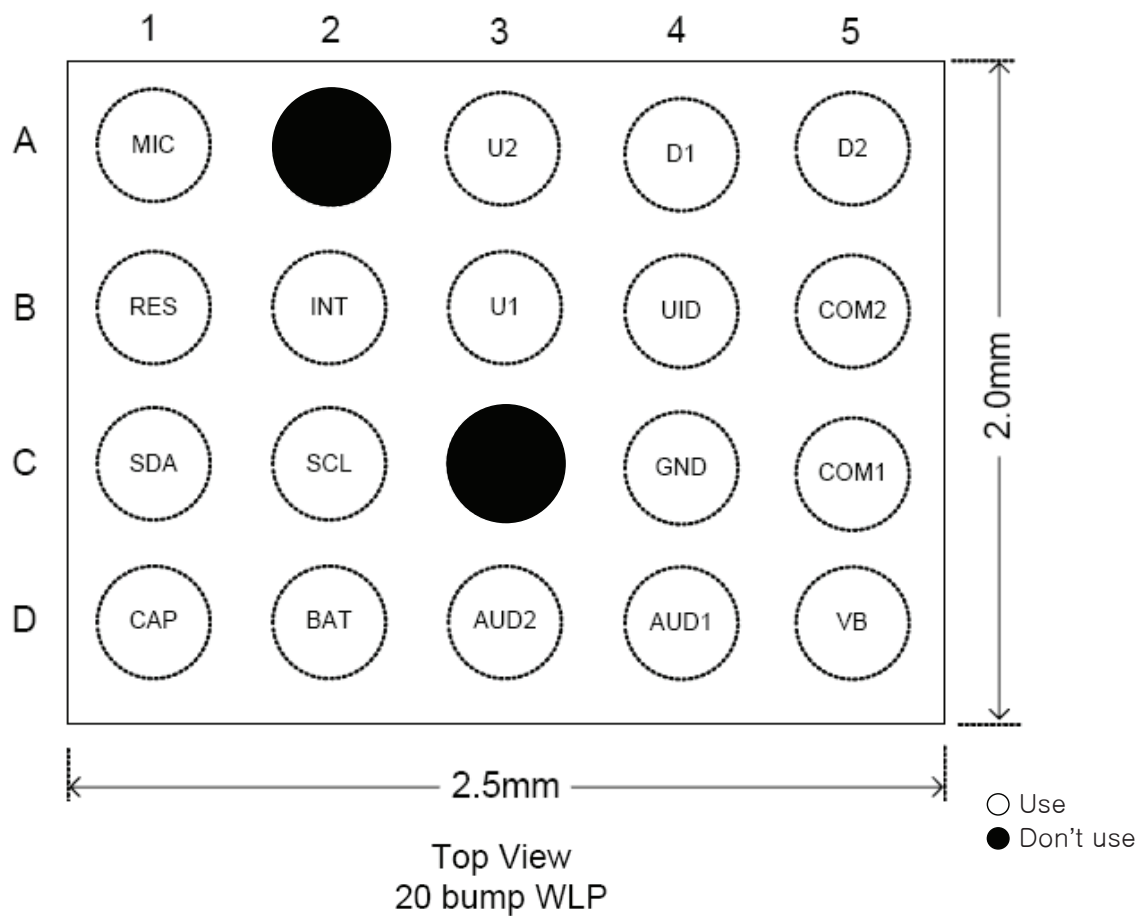


8. BGA Pin Map

2. U305 (EUSY0344203)

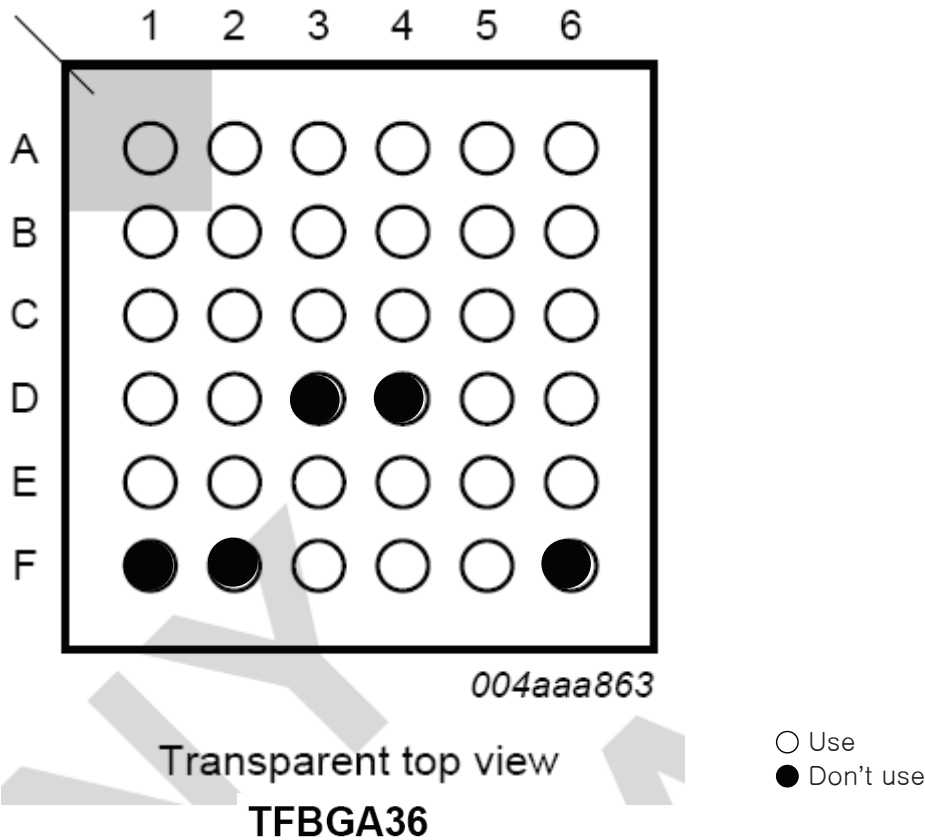


## 3. IC401 (EUSY0371201)

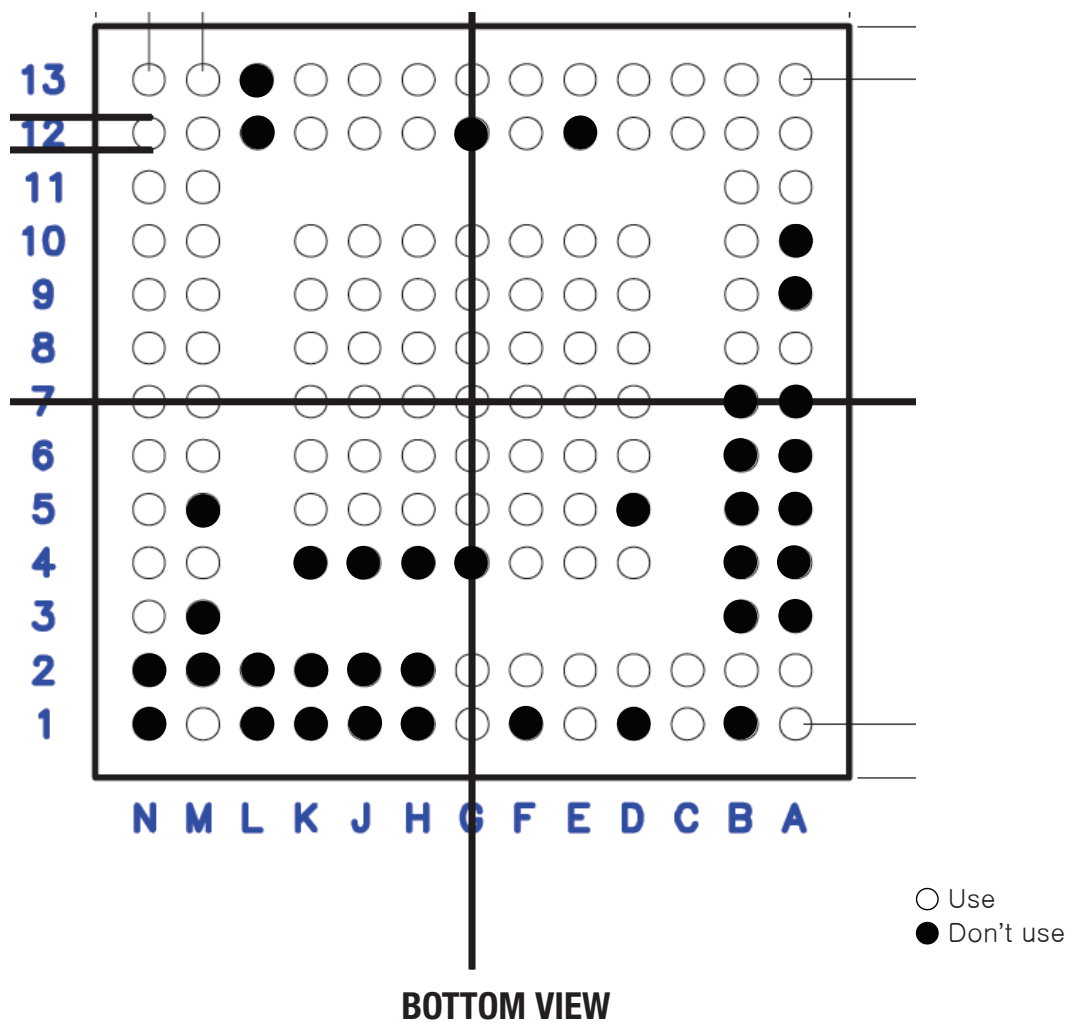


8. BGA Pin Map

4. U402 (EUSY0320201)

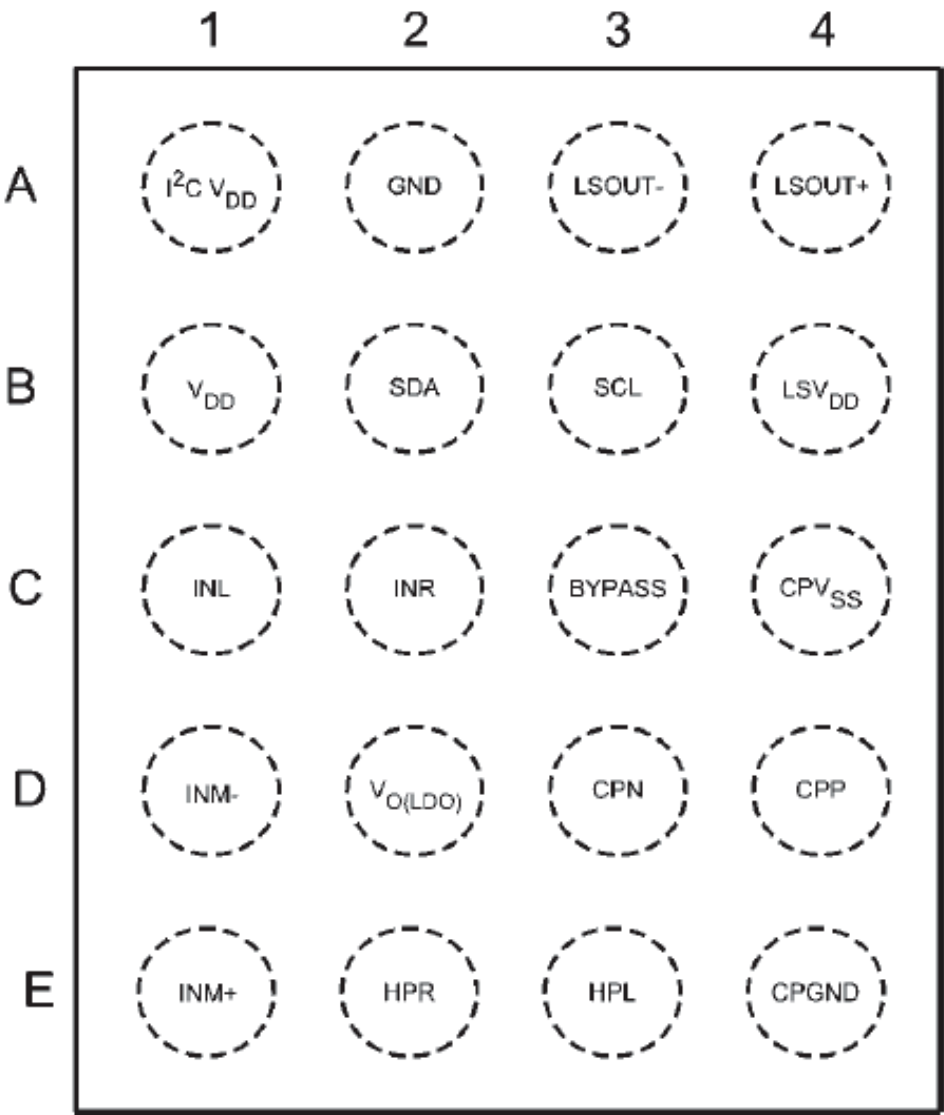


## 5. U405 (EUSY0342201)



8. BGA Pin Map

6. U502 (EUSY0365301)

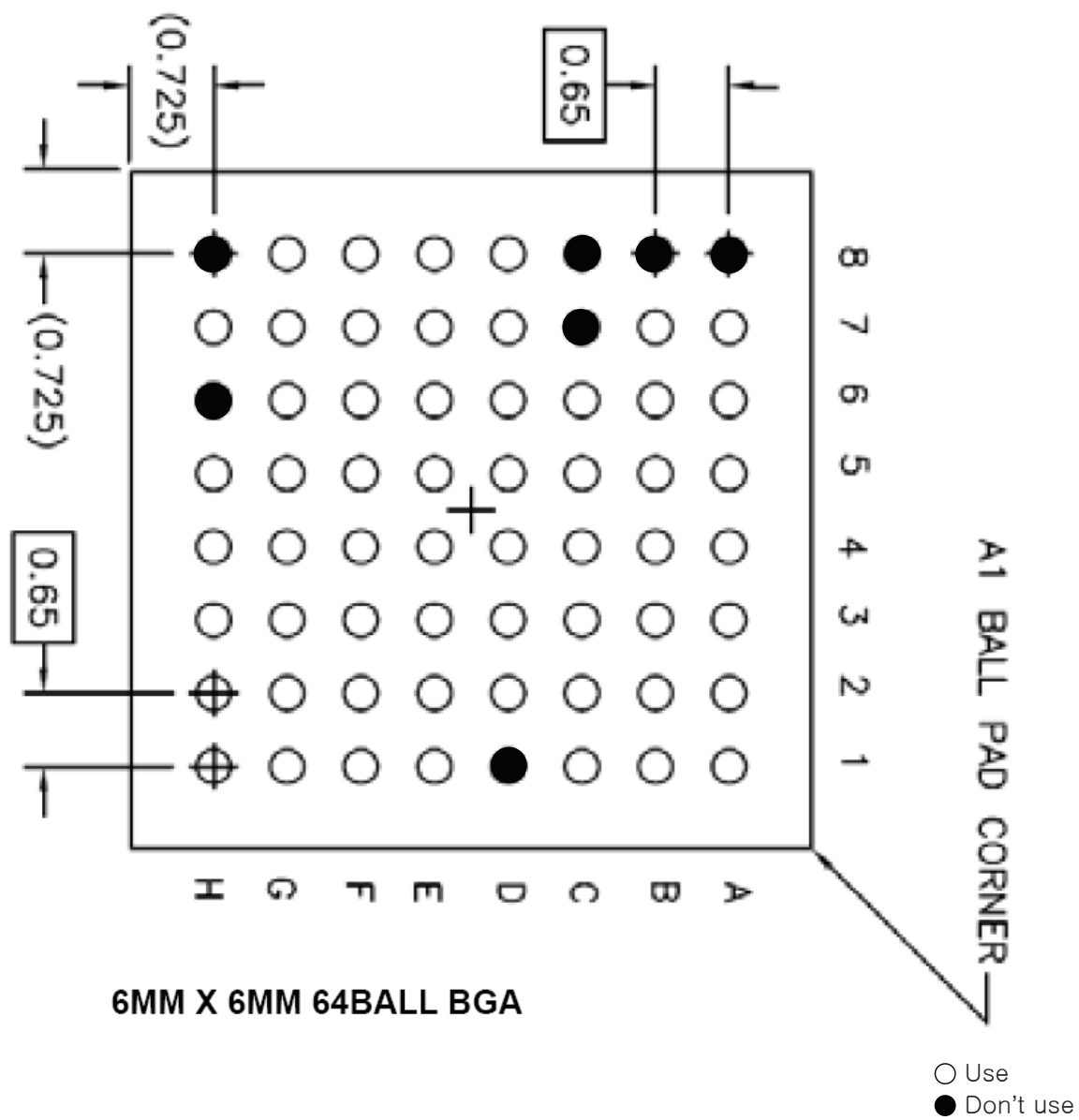


300446n8

**Top View**  
**20 Bump micro SMD Package**

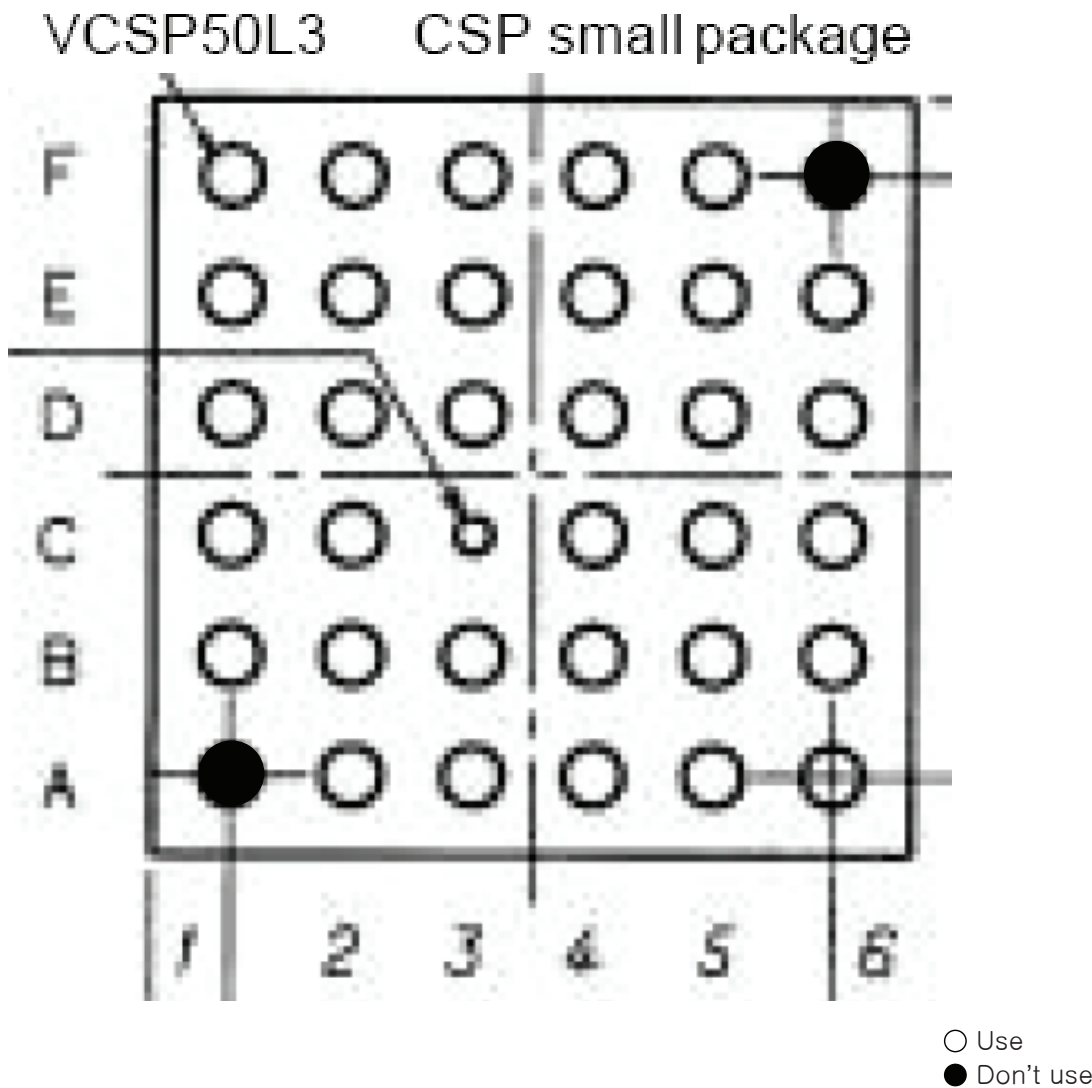
○ Use

7. U101 (Sub/EUSY0321201)

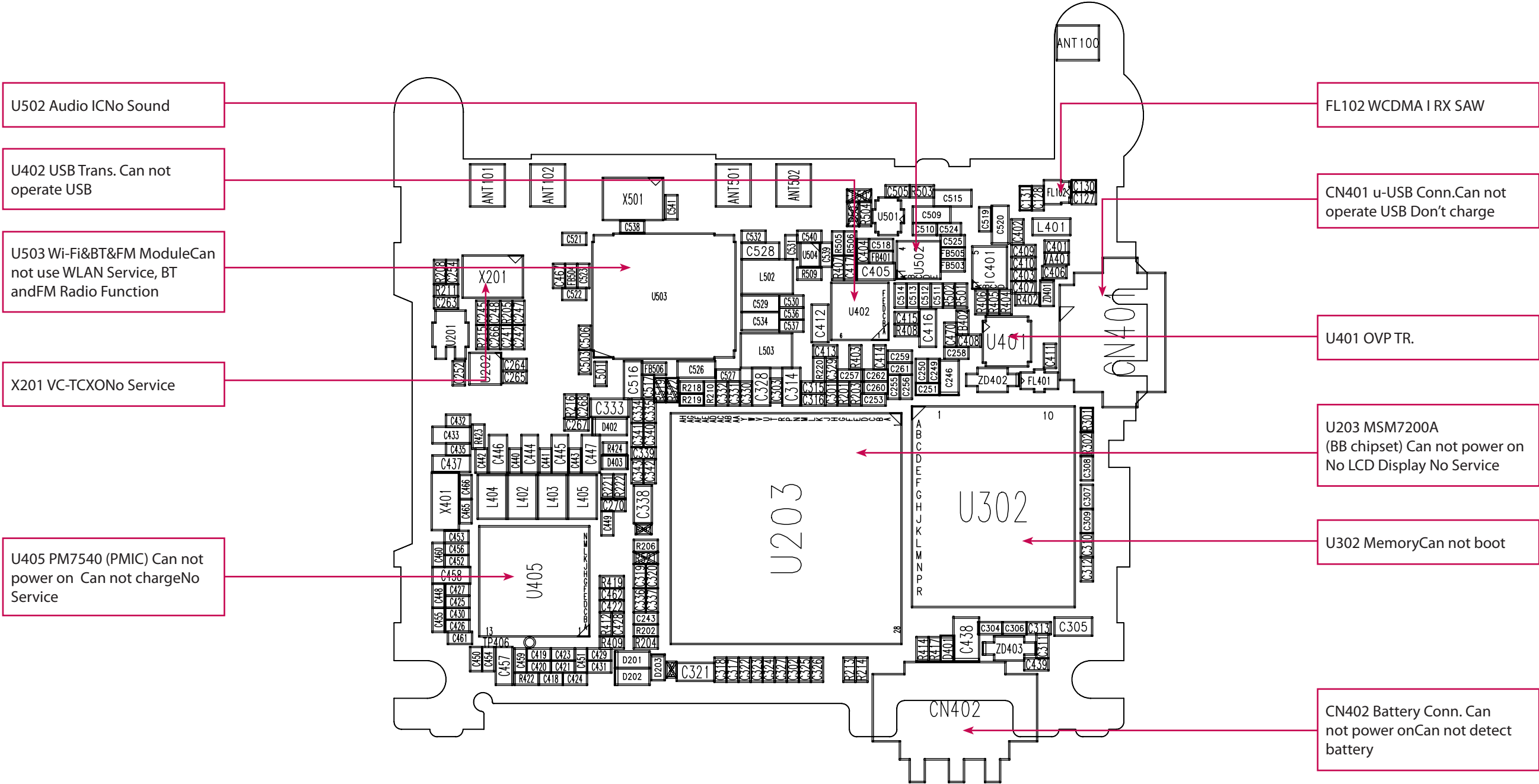


8. BGA Pin Map

8. U103 (Sub/EUSY0383101)



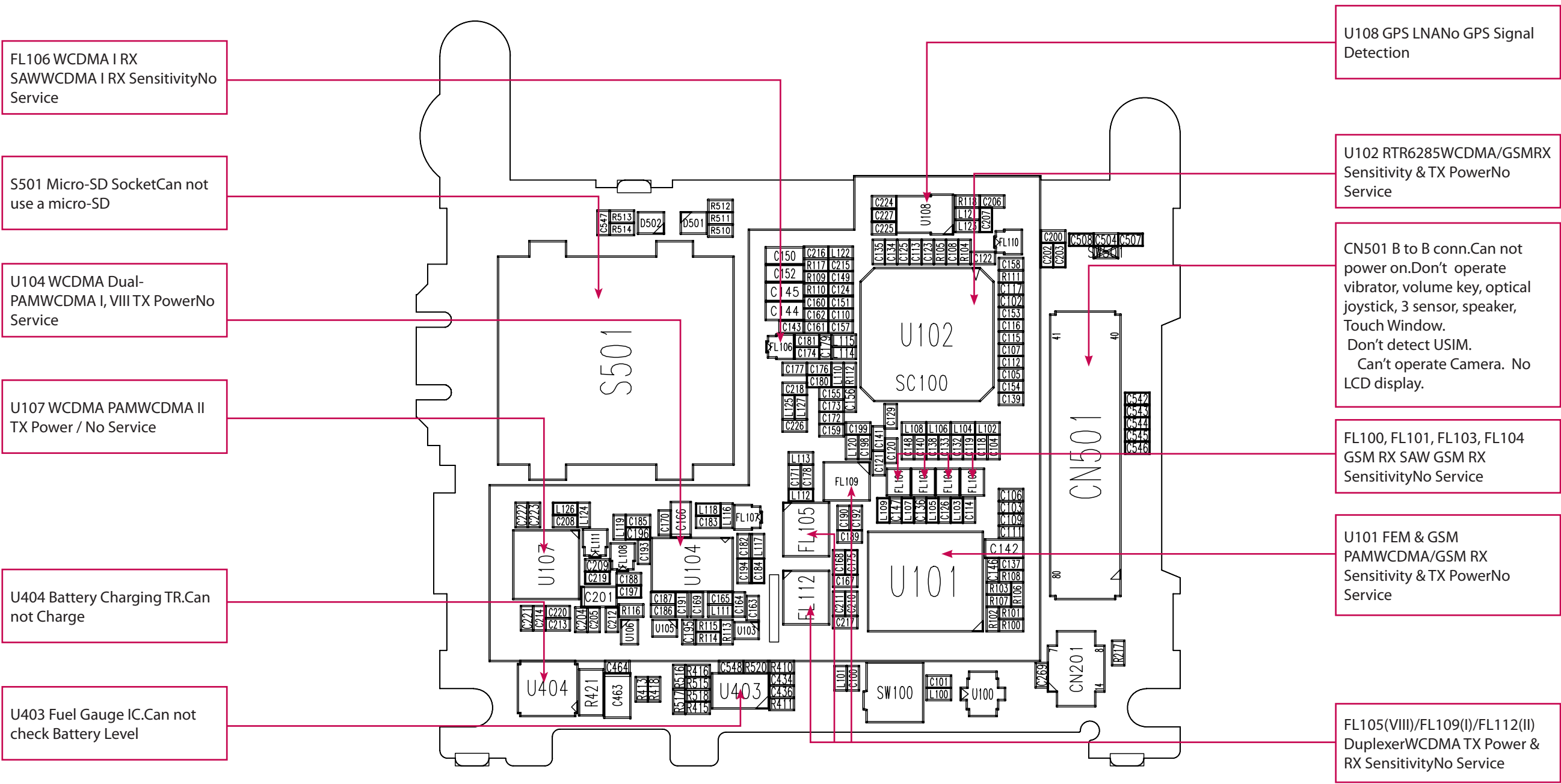
9. PCB LAYOUT



GM730/GM735-MAIN-SPFY0196001-1.0-TOP

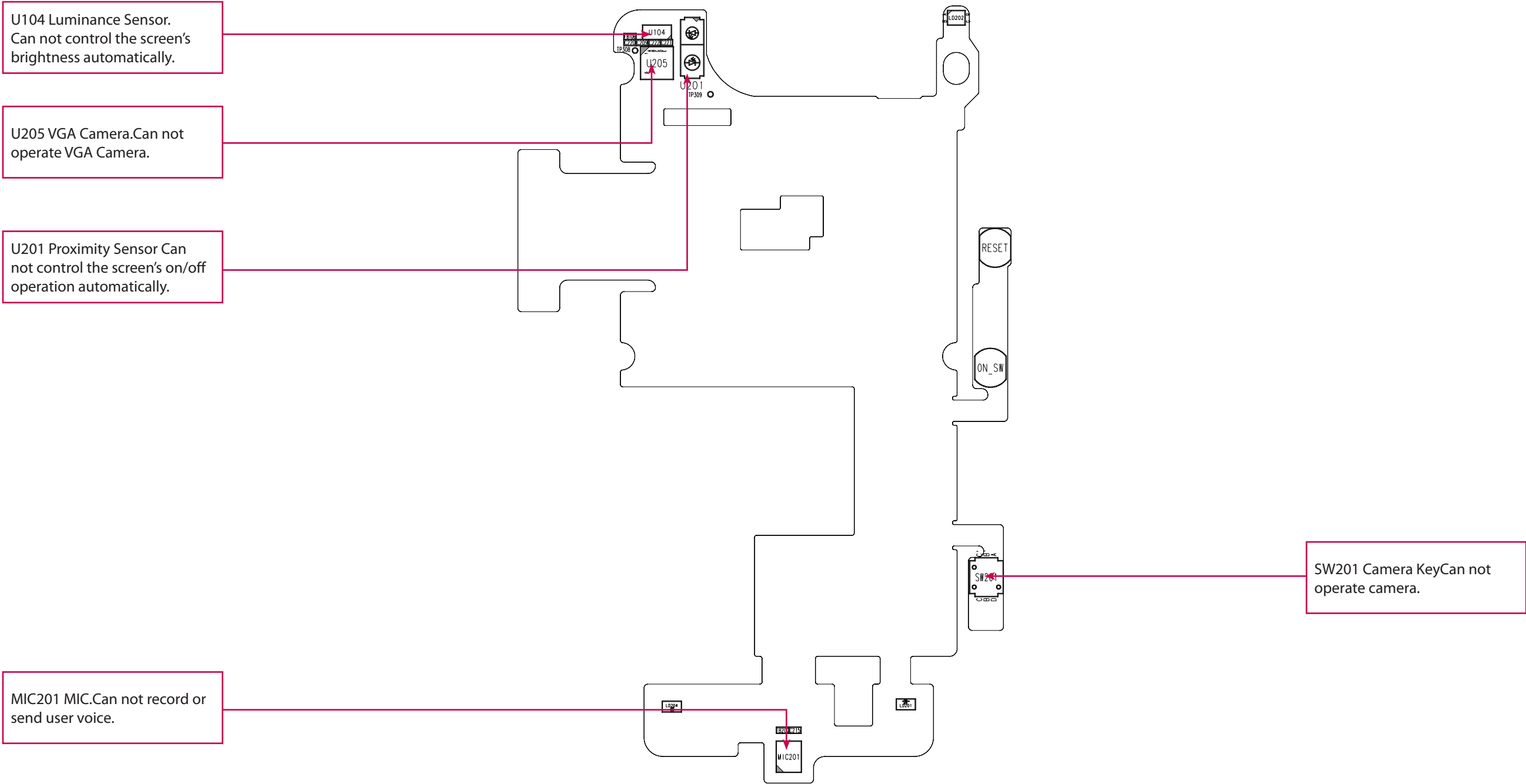


# 9. PCB LAYOUT



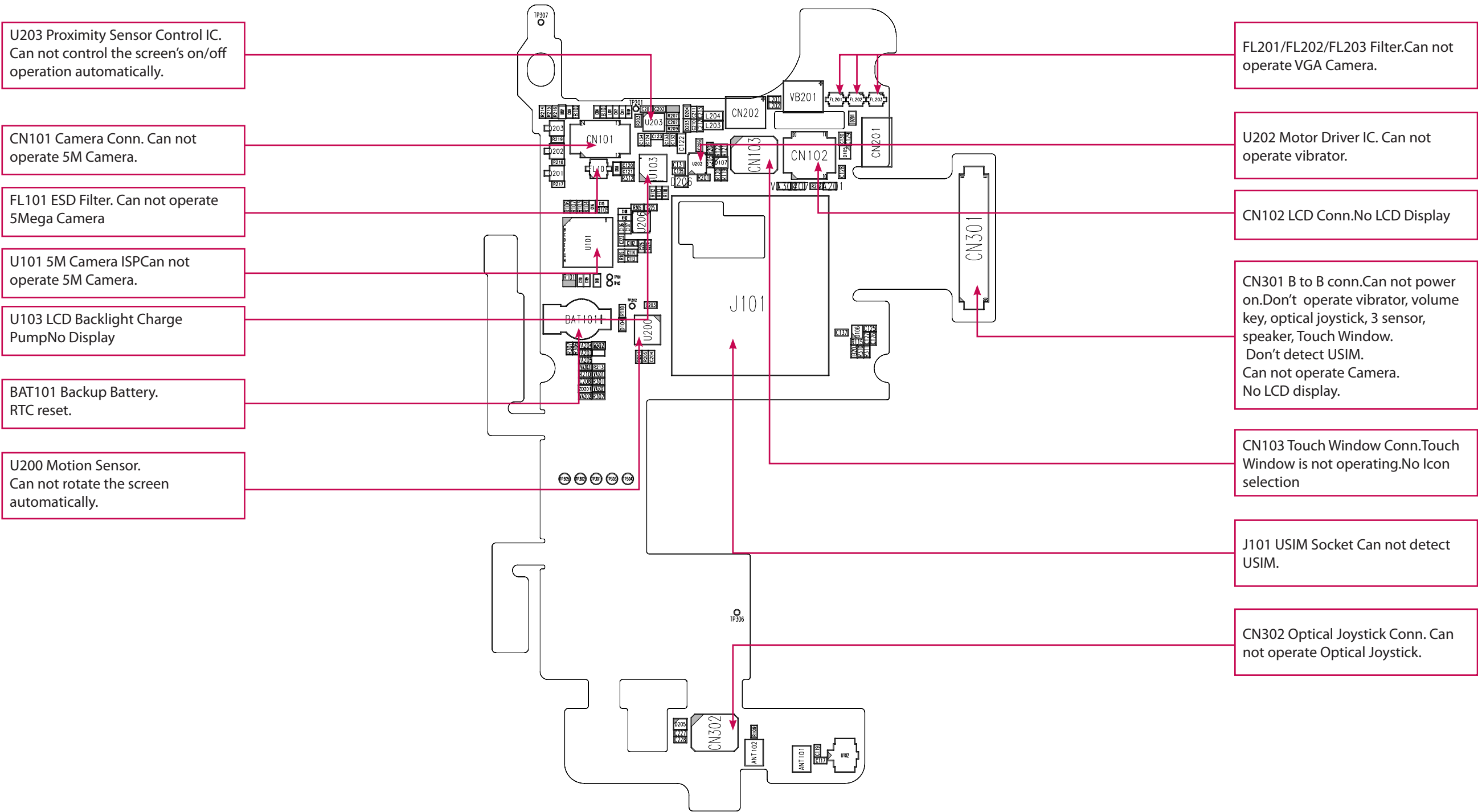
GM730/GM735 –MAIN–SPFY0196001–1.0–BTM

9. PCB LAYOUT



GM730/GM735\_RF\_SUB\_1.0\_ASSEMBLY-TOP

# 9. PCB LAYOUT

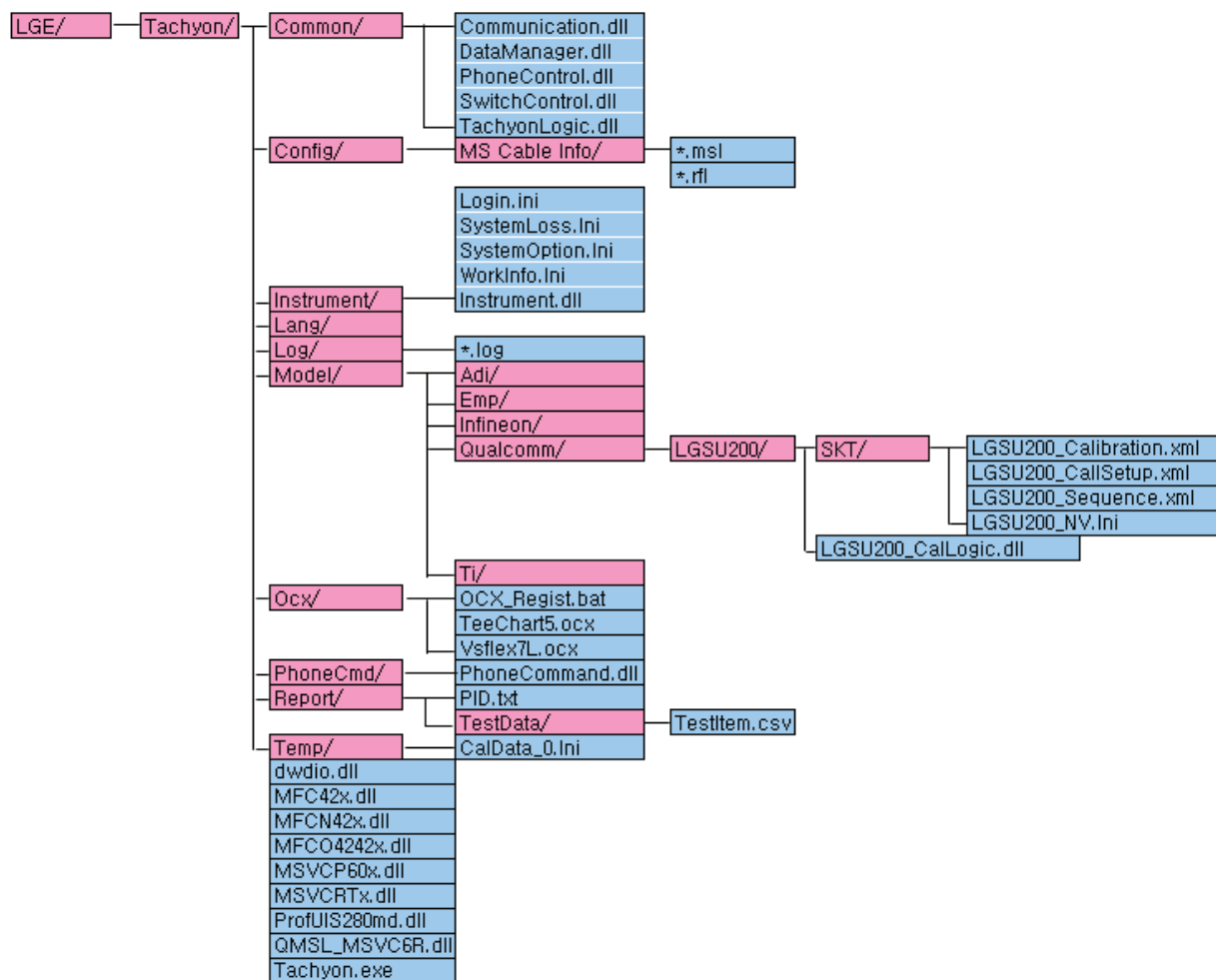


GM730/GM735\_RF\_SUB\_1.0\_ASSEMBLY-B0T

## 10. Calibration & RF Auto Test Program (Tachyon)

### 10.1 Configuration of Tachyon

#### 10.1.1 Configuration of directory



## 10. Calibration & RF Auto Test Program (Tachyon)

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### 10.1.2 Configuration of directory

Folder	Description
Tachyon	Exe file and MFC dll, UI dll is present.
Common	Common dll files. (XML Data I/O , Auto Test Logic, Tachyon Logic Control, Communication)
Config	Envirement files. (Port configuration, Loss adjust)
Instrument	Tester control dll.
Model	Model files is present. (Model -> Solution (Qualcomm, EMP, ADI, INFINEON) -> MODEL NAME(LGGM630, LGSH470, ..) -> BUYER NAME(SKT, TEL, VIVO, ...)
OCX	Conponent files.
PhoneCmd	Phone communication file
Report	Report Files is present. (Cal data, test data)

### 10.1.3 Description of configuration files

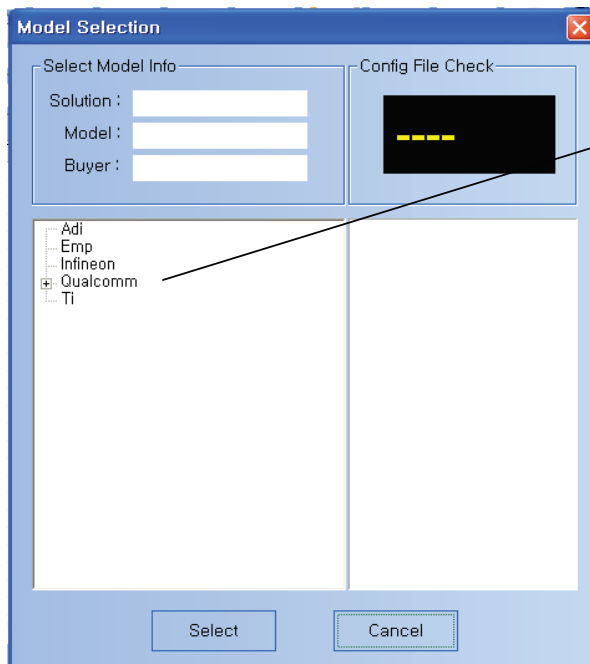
File	Description
'MODEL NAME'_Calibration.XML	There are imformations to calibrate. It consist of calibration items.
'MODEL NAME'_CallSetup.XML	There are imformations to call.
'MODEL NAME'_NV.INI	It consists of default values. It is written when 'cal&auto' is begun.
'MODEL NAME'_Sequence.XML	It is described a testing procedures.

### 10.2 How to use Tachyon

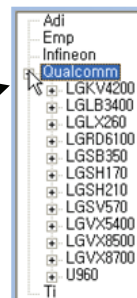
#### 10.2.1 Model selection

Follow the procedure before start calibration & auto test

- a. Click the icon,  in tool bar.  
Then, you can see the below screen



- b. Select the chipset "Qualcomm"



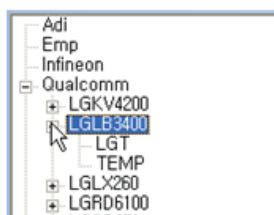
## 10. Calibration & RF Auto Test Program (Tachyon)

### 10.2.1 Model selection

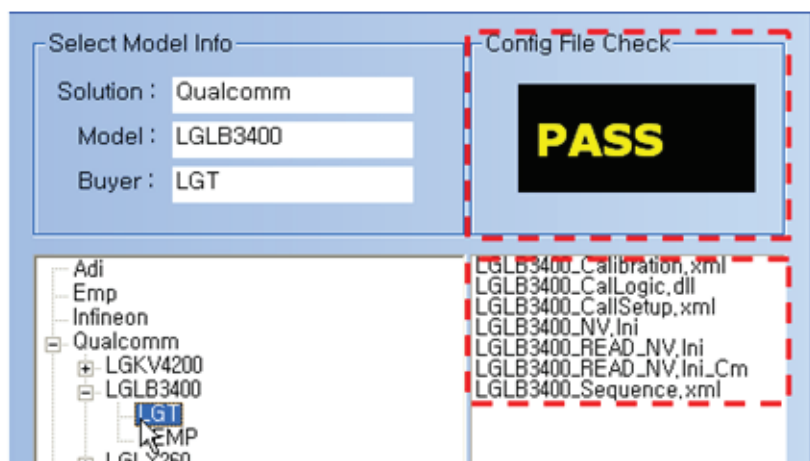
Follow the procedure before start calibration & auto test

#### c. Select the model

You should select "GM730/GM735"



#### d. Select the buyer (must be double clicked)



#### e. Click select button

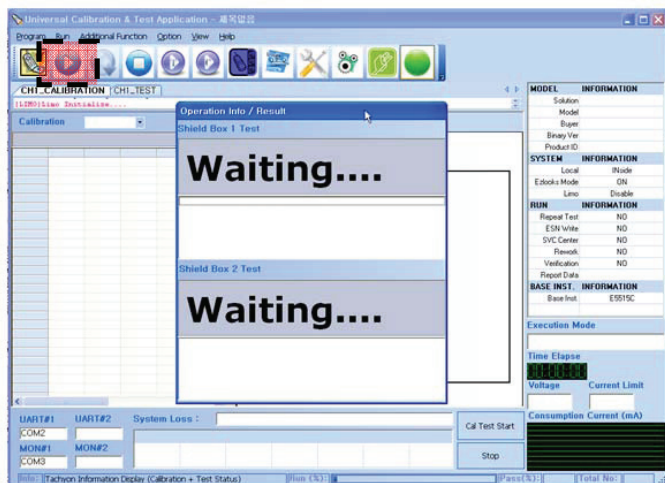
## 10. Calibration & RF Auto Test Program (Tachyon)

### 10.2.2 Start cal & auto

a. Click calibration & autotest button,



Tool bar



b. Calibration & autotest will be executed in order.

#### 1) Precede Action.

- NV write
- Test command send.

#### 2) Calibration

#### 3) Auto test

#### 4) After action

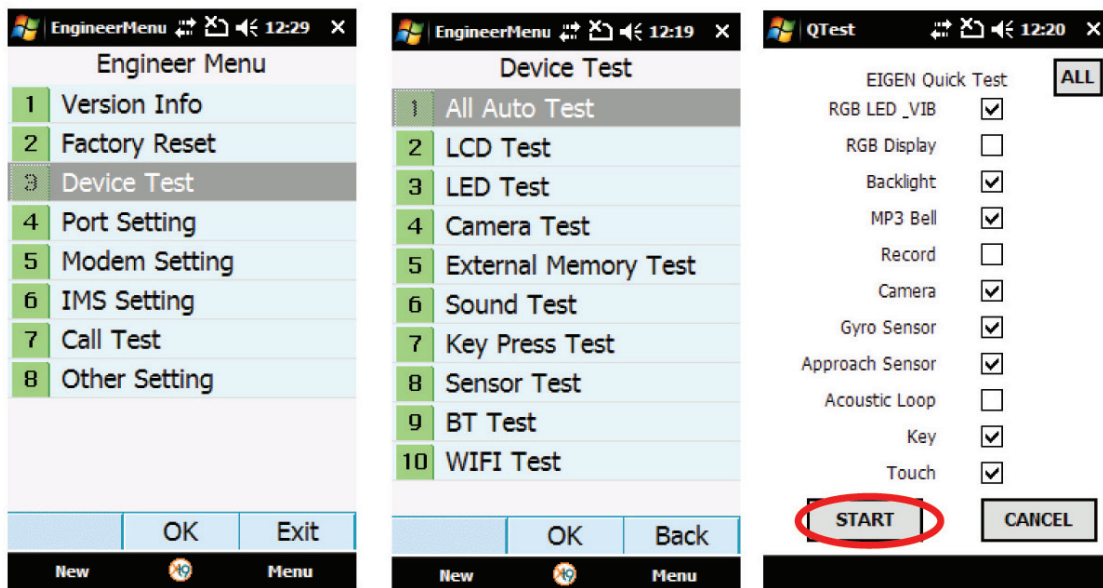
- Phone reset
- Change UE to AMSS



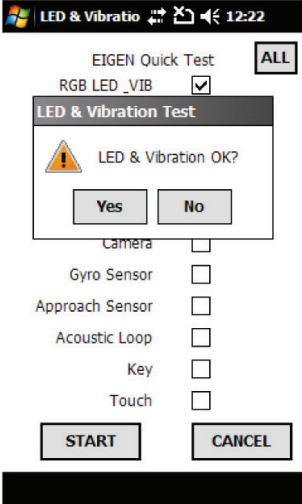
## 11. Test Mode

### 11. Test Mode

1. Enter the Engineer Menu
2. Tap 3. Device Test
3. Tap 1. ALL Auto Test
4. Tap START (Phone Test Mode) Button.

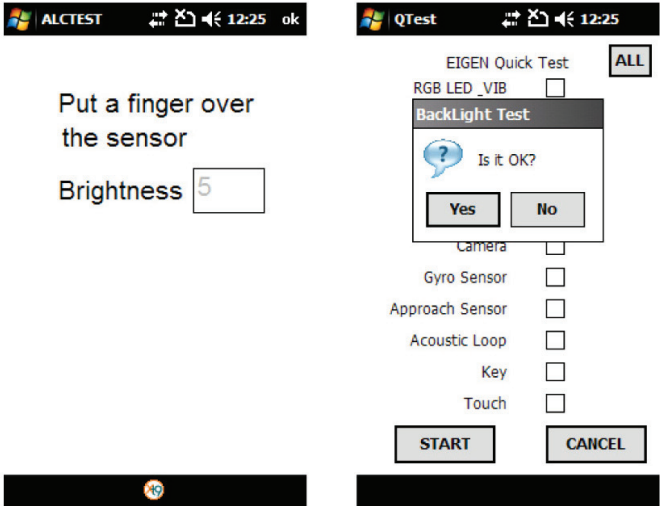


## Smart Phone GM730/GM735 (1)

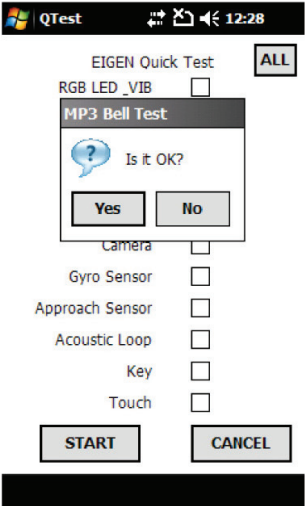
Item	Order	Description
(1) LED & Vibration Test	① Tab Start Button	 <p><b>&lt;LED SIDE&gt;</b></p> <ol style="list-style-type: none"> <li>1) Red LED On</li> <li>2) Red LED Off</li> <li>3) Green LED On</li> <li>4) Green LED Off</li> <li>5) Blue LED On</li> <li>6) Blue LED Off</li> </ol> <p>Step 1-6 are repeated</p> <p><b>&lt;Vibrator SIDE&gt;</b></p> <ol style="list-style-type: none"> <li>1) Vibrator On</li> <li>2) Vibrator Off</li> </ol> <p>Step 1-2 are repeated</p> <p>LED test and Vibrator Test are concurrently operated</p>
	② If OK, tab "YES" button	

## 11. Test Mode

### Smart Phone GM730/GM735 (2)

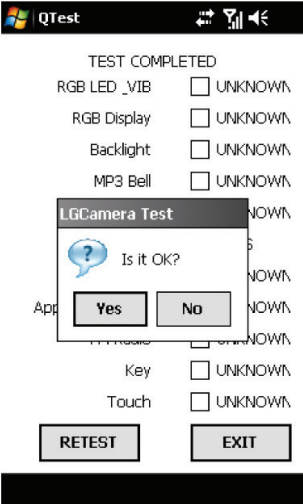
Item	Order	Description
(2) Backlight Test	① Backlight Test Start	 <p>The screenshots show the ALCTEST and QTest interfaces. The ALCTEST screen displays 'Put a finger over the sensor' and 'Brightness 5'. The QTest screen shows 'EIGEN Quick Test' with a list of sensors (RGB LED_VIB, Camera, Gyro Sensor, Approach Sensor, Acoustic Loop, Key, Touch) and a 'BackLight Test' dialog box asking 'Is it OK?' with 'Yes' and 'No' buttons. Below the dialog are 'START' and 'CANCEL' buttons.</p>
	② IF OK, tab "YES" button	<p>1) Dark -&gt; Little Dark -&gt; Bright This operation is executed at two times 2) Put a finger over the sensor and Wait for about 10 sec</p>

Smart Phone GM730/GM735 (3)

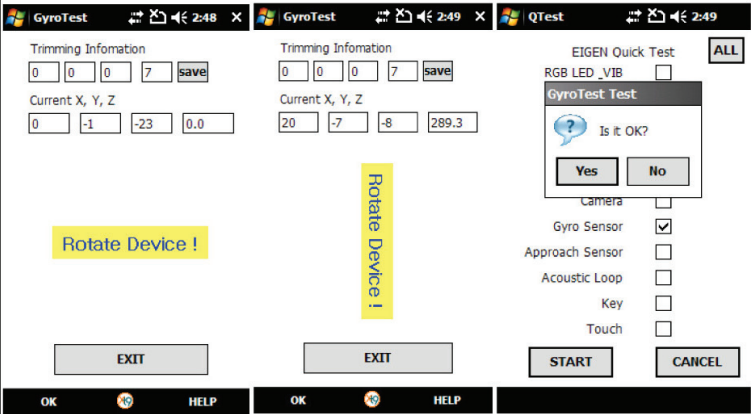
Item	Order	Description
(3) MP3 Bell Test	① MP3 Bell Test Start	
	② IF OK, tab "YES" button	<p>Ringtone (MP3) is played regularly</p>

## 11. Test Mode

### Smart Phone GM730/GM735 (4)

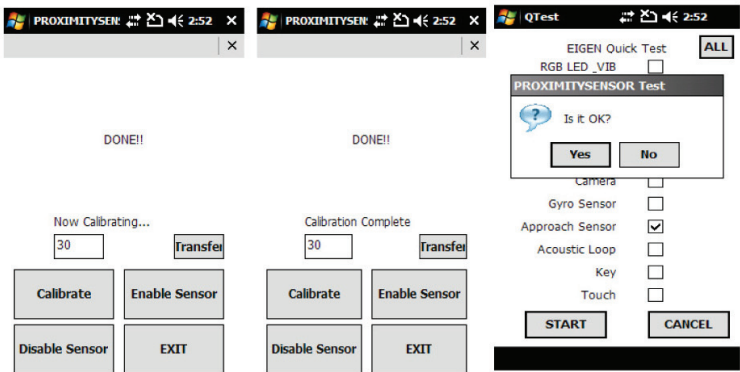
Item	Order	Description
(4) Camera Test	① Tab Start Button	 <p>1) Inner camera preview is displayed</p> <p>2) Press camera button then the captured scene is displayed</p> <p>3) Press Send button then outer camera preview is displayed</p> <p>4) Press camera button then the captured scene is displayed</p> <p>5) Press Send button then Video camera preview is displayed, Recording starts automatically.</p> <p>6) And then the recorded scene is displayed.</p>
	② IF OK, tab "YES" button	

## Smart Phone GM730/GM735 (5)


Item	Order	Description
(5) Gyro Sensor Test	① Tab Start Button	
	② IF OK, tab "YES" button	<ol style="list-style-type: none"> <li>1) Rotate the device</li> <li>2) "Rotate Device !" is moved.</li> <li>3) Rotate again and wait for a while</li> </ol>

## 11. Test Mode

### Smart Phone GM730/GM735 (6)

Item	Order	Description
(6) Approach Sensor Test	① Tab Start Button	
	② IF OK, tab "YES" button	<ol style="list-style-type: none"> <li>1) Press calibrate button the it is initialized</li> <li>2) Put a finger over the sensor and then LCD displayed is turned off</li> </ol>


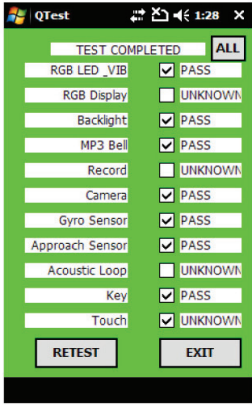
Smart Phone GM730/GM735 (7)

Item	Order	Description
(7) Key Test	① Tab Start Button	<div></div> <p>Press a key that red arrow indicate</p> <p>&lt; Caution &gt; At Optical Mouse check, Rub to reverse direction of red arrow</p>
	② IF OK, tab "YES" button	



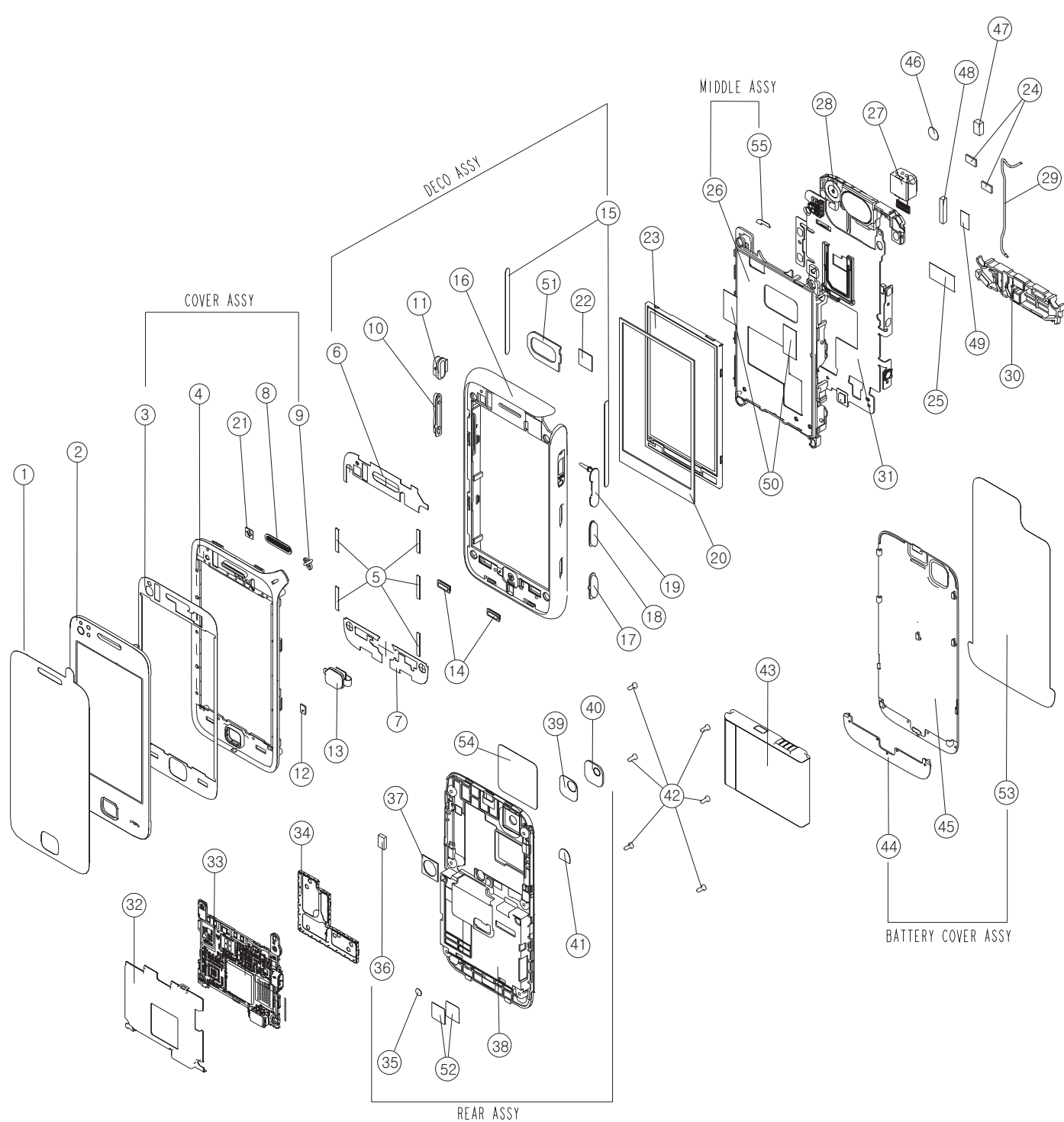
## 11. Test Mode

### Smart Phone GM730/GM735 (8)

Item	Order	Description
(8) Touch Test	① Tab Start Button	
	② IF OK, tab "YES" button	 <p>1) This notes is displayed</p> <p>2) Tab OK button to exit</p>

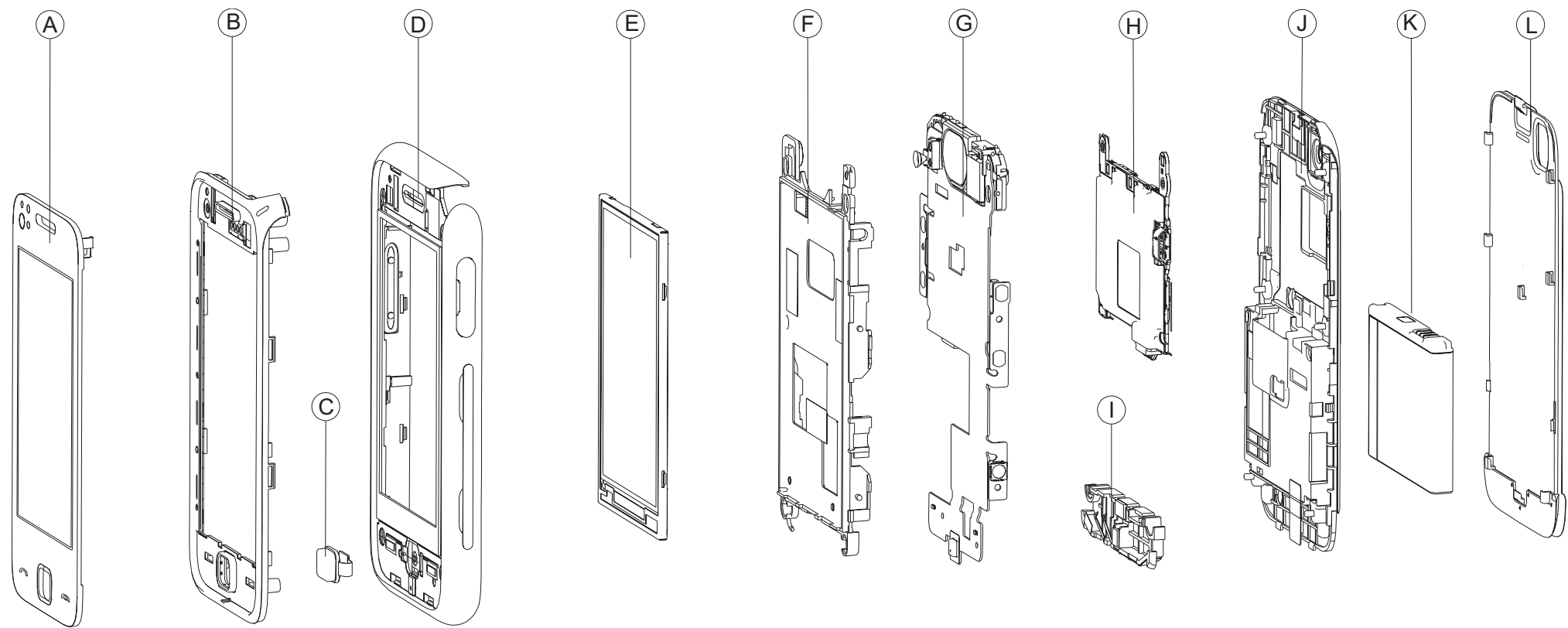
12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW



55	TAPE, FPCB	MTAJ002410I	1	
54	SHEET, SIM TRAY GUIDE	MSAB003410I	1	
53	TAPE, BATT. COVER PROTECTION	MTAB032300I	1	
52	TAPE, SHEILD	MTAB033230I	2	
51	PAD, SPEAKER	MPBN007500I	1	
50	TAPE, LCD	MTAB032310I	2	
49	INSULATOR, CHIP	MIDZ021780I	1	
48	GASKET, B TO B	MGAD019630I	1	
47	PAD, FPCB	MPBF004690I	1	
46	TAPE, MOTOR	MTAC008910I	1	
45	COVER, BATTERY[MAIN]	MCJA007980I	1	
44	COVER, BATTERY[DECO]	MCJA008000I	1	
43	BATTERY	SBPL009870I	1	
42	SCREW MACHINE BIND	GMEY000920I	6	
41	CAP, MOBILE SW	MCCF006120I	1	
40	WINDOW, CAMERA	MWAE004330I	1	
39	TAPE, WINDOW[5M CAMERA]	MTAK002490I	1	
38	COVER REAR	MCJN009620I	1	
37	PAD, 5M CAMERA	MPBT007590I	1	
36	PAD, MOTOR(VIBRATOR)	MPBJ006590I	1	
35	LABEL, AS	MLAB0001102	1	
34	CAN SHIELD[SMT]	ACKA001810I	1	
33	PCB ASSY MAIN	SPFY019600I	1	
32	FRAME ASSY, SHIELD[HOOK]	ACKA001630I	1	
31	PCB ASSY SUB	SPCY016970I	1	
30	MAIN ANTENNA	SNGF004640I	1	
29	RF CABLE	SWCC000570I	1	
28	GPS ANTENNA	SNGF004630I	1	
27	CAMERA[5M]	SVCY001730I	1	
26	FRAME ASSY[MIDDLE]	AFBZ001190I	1	
25	LCD, INSULATION	MIDZ021110I	1	
24	PAD, CONNECTOR	MPBU006770I	2	
23	LCD	SVLM002890I	1	
22	TAPE, CAMERA[5M]	MTAK002630I	1	
21	PAD, CAMERA[VGA]	MPBT007600I	1	
20	PAD, LCD	MPBG009260I	1	
19	CAP, RECEPTACLE	MCCE004830I	1	
18	BUTTON, SIDE[POWER]	MBJL007610I	1	
17	BUTTON, SIDE[CAMERA]	MBJL007600I	1	
16	DECO, SIDE	MDAC002490I	1	
15	TAPE, PROTECTION[SIDE]	MTAB030400I	2	
14	INDICATOR, KEY LED	M1AA002600I	2	
13	OPTICAL, JOYSTICK	SMZY002260I	1	
12	PAD, MIC	MPBH004760I	1	
11	HANDSTRAP	MHBY000790I	1	
10	BUTTON, SIDE[VOLUME]	MBJL007590I	1	
9	INDICATOR, LED	M1AA002560I	1	
8	FILTER, SPEAKER	MFBC005050I	1	
7	TAPE, DECO[BOTTOM]	MTAA018850I	1	
6	TAPE, DECO[TOP]	MTAA018840I	1	
5	TAPE, DECO[SIDE]	MTAA018870I	5	
4	COVER FRONT INSERT ASSY	ACGK012770I	1	
3	TAPE, WINDOW[LCD]	MTAD010680I	1	
2	WINDOW, LCD	MWAC011270I	1	
1	TAPE, PROTECTION[LCD]	MTAB030110I	1	
No	Part Name	Part Number	Q'ty	Remark

ASS'Y EXPLODED VIEW



L	COVER BATTERY ASSY	ACGA002950I		
K	BATTERY PACK	SBPL009870I		
J	COVER ASSY, REAR	ACGM012650I		
I	MAIN ANTENNA	SNGF004640I		
H	PCB ASSY, MAIN	SPFY019600I		
G	PCB ASSY, SUB	SPCY016970I		
F	MIDDLE FRAME ASSY	AFBZ001190I		
E	LCD	SVLM002890I		
D	DECO ASSY	AFBZ001360I		
C	OPTICAL JOYSTICK	SMZY002260I		
B	COVER ASSY	ACGZ001890I		
A	TOUCH WINDOW	MWAC011270I		
No	Part Name	Part Number	Q'ty	Remark

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.2 Replacement Parts <Mechanic component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
2	AAAY00	ADDITION	AAAY0386001		WITHOUT COLOR	
3	ACGA	COVER ASSY,BATTERY	ACGA0033101		BLACK	L
4	MCJA00	COVER,BATTERY	MCJA0097001	MOLD, PC LUPOY SC-1004ML, , , , ,	BLACK	45
4	MCJA01	COVER,BATTERY	MCJA0080001	MOLD, PC LUPOY HI-1002M, , , , ,	BLACK	44
4	MTAB00	TAPE,PROTECTION	MTAB0323001	COMPLEX, (empty), 0.05, 46.6, 97.4, ,	WITHOUT COLOR	53
2	APEY00	PHONE	APEY0745501		BLACK	
3	ACGM00	COVER ASSY,REAR	ACGM0126501		BLACK	J
4	MCCF00	CAP,MOBILE SWITCH	MCCF0061201	COMPLEX, (empty), , , , ,	BLACK	41
4	MCJN00	COVER,REAR	MCJN0096201	COMPLEX, (empty), , , , ,	BLACK	38
4	MLAB00	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	WHITE	35
4	MPBJ00	PAD,MOTOR	MPBJ0065901	COMPLEX, (empty), , , , ,	BLACK	36
4	MPBT00	PAD,CAMERA	MPBT0075901	COMPLEX, (empty), , , , ,	BLACK	37
4	MSAB00	SHEET,OPERATING	MSAB0034101	COMPLEX, (empty), , , , ,	BLACK	54
4	MTAB00	TAPE,PROTECTION	MTAB0332301	COMPLEX, (empty), , , , ,	WITHOUT COLOR	52
4	MTAK00	TAPE,CAMERA	MTAK0024901	COMPLEX, (empty), , , , ,	WITHOUT COLOR	39
4	MWAE00	WINDOW,CAMERA	MWAE0043301	COMPLEX, (empty), , , , ,	WITHOUT COLOR	40
3	ACGV00	COVER ASSY,BAR	ACGV0006901		WITHOUT COLOR	
4	ACGK00	COVER ASSY,FRONT	ACGK0127701		BLACK	4
5	ACGZ00	COVER ASSY	ACGZ0018901		WITHOUT COLOR	B
6	MCJK00	COVER,FRONT	MCJK0099301	COMPLEX, (empty), , , , ,	BLACK	
7	MBFF	BRACKET,LCD	MBFF0023801	CASTING, Mg Alloy, , , , ,	WITHOUT COLOR	
7	MICZ00	INSERT	MICZ0028601	CUTTING, BeCu, , , , ,	Without Color	
6	MFBC00	FILTER,SPEAKER	MFBC0050501	COMPLEX, (empty), , , , ,	BLACK	8
6	MIAA00	INDICATOR,LED	MIAA0025601	COMPLEX, (empty), , , , ,	WITHOUT COLOR	9
6	MPBH00	PAD,MIKE	MPBH0047601	COMPLEX, (empty), , , , ,	BLACK	12

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	MPBT00	PAD,CAMERA	MPBT0076001	COMPLEX, (empty), , , ,	BLACK	21
6	MTAC00	TAPE,SHIELD	MTAC0098001	COMPLEX, (empty), , , ,	WITHOUT COLOR	
6	MTAD00	TAPE,WINDOW	MTAD0106801	COMPLEX, (empty), , , ,	WITHOUT COLOR	3
5	AFBZ00	FRAME ASSY	AFBZ0013601		SILVER	D
6	MBJL00	BUTTON,SIDE	MBJL0075901	COMPLEX, (empty), , , ,	BLACK	10
6	MBJL01	BUTTON,SIDE	MBJL0076001	COMPLEX, (empty), , , ,	BLACK	17
6	MBJL02	BUTTON,SIDE	MBJL0076101	COMPLEX, (empty), , , ,	BLACK	18
6	MCCE00	CAP,RECEPTACLE	MCCE0048301	COMPLEX, (empty), , , ,	BLACK	19
6	MDAC00	DECO,SIDE	MDAC0024901	COMPLEX, (empty), , , ,	SILVER	16
6	MIAA00	INDICATOR,LED	MIAA0026001	MOLD, PMMA HI835M, , , ,	WHITE	14
6	MPBN00	PAD,SPEAKER	MPBN0075001	COMPLEX, (empty), , , ,	BLACK	51
6	MTAA00	TAPE,DECO	MTAA0188401	COMPLEX, (empty), , , ,	WITHOUT COLOR	6
6	MTAA01	TAPE,DECO	MTAA0188501	COMPLEX, (empty), , , ,	WITHOUT COLOR	7
6	MTAA02	TAPE,DECO	MTAA0188701	COMPLEX, (empty), , , ,	WITHOUT COLOR	5
6	MTAB00	TAPE,PROTECTION	MTAB0304001	COMPLEX, (empty), , , ,	GREEN BLUE	15
6	MTAB01	TAPE,PROTECTION	MTAB0345301	COMPLEX, (empty), , , ,	WITHOUT COLOR	
6	MTAK00	TAPE,CAMERA	MTAK0026301	COMPLEX, (empty), , , ,	WITHOUT COLOR	22
4	AFBZ00	FRAME ASSY	AFBZ0011901		WITHOUT COLOR	F, 26
5	MDAG00	DECO,FRONT	MDAG0045101	MOLD, PC LUPOY HI-1002M, , , ,	SILVER	
6	MBFZ00	BRACKET	MBFZ0034501	PRESS, STS, , , ,	SILVER	
6	MBFZ01	BRACKET	MBFZ0034601	PRESS, STS, , , ,	SILVER	
6	MICE00	INSERT,NUT	MICE0004901	COMPLEX, (empty), , , ,	WITHOUT COLOR	
5	MTAB00	TAPE,PROTECTION	MTAB0323101	COMPLEX, (empty), , , ,	WITHOUT COLOR	50
5	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0024101	COMPLEX, (empty), , , ,	WITHOUT COLOR	55
4	MIDZ00	INSULATOR	MIDZ0211101	COMPLEX, (empty), , , ,	BLACK	25
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0046901	COMPLEX, (empty), , , ,	BLACK	47
4	MPBG00	PAD,LCD	MPBG0092601	COMPLEX, (empty), , , ,	BLACK	20

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MPBU00	PAD,CONNECTOR	MPBU0067701	COMPLEX, (empty), , , ,	BLACK	24
4	MTAB00	TAPE,PROTECTION	MTAB0301101	COMPLEX, (empty), , , ,	GREEN	1
4	MTAB01	TAPE,PROTECTION	MTAB0342101	COMPLEX, (empty), , , ,	WITHOUT COLOR	
4	MTAC00	TAPE,SHIELD	MTAC0098501	COMPLEX, (empty), , , ,	WITHOUT COLOR	
4	MWAC00	WINDOW,LCD	MWAC0112701	COMPLEX, (empty), , , ,	WITHOUT COLOR	A, 2
6	MGAD	GASKET,SHIELD FORM	MGAD0196301	COMPLEX, (empty), , , ,	YELLOW	48
6	MIDZ	INSULATOR	MIDZ0217801	COMPLEX, (empty), , , ,	WITHOUT COLOR	49
6	MTAC	TAPE,SHIELD	MTAC0089101	COMPLEX, (empty), , , ,	WITHOUT COLOR	46
6	MTAC00	TAPE,SHIELD	MTAC0096501	COMPLEX, (empty), , , ,	BLACK	
3	GMEY00	SCREW MACHINE,BIND	GMEY0009201	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7mm	Black	42
3	MLAA00	LABEL,APPROVAL	MLAA0062304	COMPLEX, (empty), , , ,	WITHOUT COLOR	
5	MPBL00	PAD,MSM	MPBL0009201	COMPLEX, (empty), , , ,	WITHOUT COLOR	
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	WITHOUT COLOR	
6	SC100	CAN ASSY,SHIELD	ACKA0018101		SILVER	34
7	MCBA00	CAN,SHIELD	MCBA0042601	PRESS, STS, , , ,	WITHOUT COLOR	
7	MFEA00	FRAME,SHIELD	MFEA0027001	PRESS, STS, , , ,	WITHOUT COLOR	

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.2 Replacement Parts

#### <Main component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		IMT,BAR/FLIP	TIMT0004601		BLACK	
5	SMZY00	MODULE,ETC	SMZY0022601	Optical Mouse Module ,; ,Module Assembly		C, 13
4	SAJY	PCB ASSY,SUB	SAJY0039603			
5	SAJB	PCB ASSY,SUB,INSERT	SAJB0018902			
6	BRAH00	RESIN,PC	BRAH0001301	; , , , [empty]	Black	
6	ENSY	CONN,SOCKET	ENSY0022703	10 ,ETC , , mm,Tray (Gray)		
5	SAJE	PCB ASSY,SUB,SMT	SAJE0031902			
6	SAJC	PCB ASSY,SUB,SMT BOTTOM	SAJC0030602			
7	BAT101	BATTERY,CELL,LITHIUM	SBCL0001305	3 V,1 mAh,COIN ,SMT Temp.260 degree. PB-Free B/B		
7	C102	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C103	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C104	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C107	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C108	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C109	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C110	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C111	CAP,CERAMIC,CHIP	ECCH0000133	220 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
7	C112	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C113	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
7	C114	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP ,; ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
7	C115	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C116	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C117	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C119	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
7	C120	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C121	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	C122	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
7	C123	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C124	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C125	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C126	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C127	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C128	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C129	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C130	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C131	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C132	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C133	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C134	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C135	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C137	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
7	C201	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C202	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C203	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C204	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
7	C205	CAP,CHIP,MAKER	ECZH0001120	3900 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
7	C206	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C207	CAP,CERAMIC,CHIP	ECCH0000149	3.3 nF,50V,K,X7R,HD,1005,R/TP		
7	C208	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C210	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C211	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C212	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
7	C213	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
7	C223	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C224	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C225	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C226	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C227	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		



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## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	FL202	FILTER,EMI/POWER	SFEY0013701	SMD ,18 V,4ch. EMI_ESD Filter (100 Ohm, 7.5pF)		
7	FL203	FILTER,EMI/POWER	SFEY0013701	SMD ,18 V,4ch. EMI_ESD Filter (100 Ohm, 7.5pF)		
7	J101	CONN,SOCKET	ENSY0022701	10 ,ANGLE ,Tray type , mm,H=1.8, P=1.28		
7	L101	INDUCTOR,CHIP	ELCH0004722	47 nH,J ,1005 ,R/TP ,		
7	L201	INDUCTOR,CHIP	ELCH0001425	82 nH,J ,1005 ,R/TP ,PBFREE		
7	L202	INDUCTOR,CHIP	ELCH0001425	82 nH,J ,1005 ,R/TP ,PBFREE		
7	L203	INDUCTOR,CHIP	ELCH0004203	68 nH,J ,1608 ,R/TP ,		
7	L204	INDUCTOR,CHIP	ELCH0004203	68 nH,J ,1608 ,R/TP ,		
7	Q201	TR,FET,N-CHANNEL	EQFN0005601	ESM ,100 mW,30 V,100 mA,R/TP ,		
7	Q202	TR,FET,N-CHANNEL	EQFN0005601	ESM ,100 mW,30 V,100 mA,R/TP ,		
7	Q203	TR,FET,N-CHANNEL	EQFN0005601	ESM ,100 mW,30 V,100 mA,R/TP ,		
7	R101	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R102	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R103	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
7	R104	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
7	R105	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
7	R106	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
7	R107	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
7	R109	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R110	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R112	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R113	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R115	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
7	R118	RES,CHIP,MAKER	ERHZ0003001	30 Kohm,1/16W ,F ,1005 ,R/TP		
7	R119	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
7	R120	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
7	R121	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
7	R122	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
7	R201	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R202	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R203	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R204	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	R205	RES,CHIP	ERHY0000254	4.7K ohm,1/16W ,J ,1005 ,R/TP		
7	R207	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R208	RES,CHIP,MAKER	ERHZ0000252	240 Kohm,1/16W ,F ,1005 ,R/TP		
7	R209	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
7	R210	RES,CHIP,MAKER	ERHZ0000439	200 Kohm,1/16W ,J ,1005 ,R/TP		
7	R211	RES,CHIP,MAKER	ERHZ0000429	180 ohm,1/16W ,J ,1005 ,R/TP		
7	R213	RES,CHIP,MAKER	ERHZ0000429	180 ohm,1/16W ,J ,1005 ,R/TP		
7	R214	RES,CHIP,MAKER	ERHZ0000506	6800 ohm,1/16W ,J ,1005 ,R/TP		
7	R215	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R216	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
7	R217	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R218	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R219	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R301	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R302	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
7	R305	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
7	R306	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R307	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R310	RES,CHIP,MAKER	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP		
7	R311	RES,CHIP,MAKER	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP		
7	R312	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	U101	IC	EUSY0321201	BGA ,64 PIN,R/TP ,6*6 ISP		
7	U102	CONN,RF SWITCH	ENWY0005501	,SMD , dB, , ; ,0.30MM ,STRAIGHT ,SOCKET ,SMD ,[empty] ,[empty] , ,		
7	U103	IC	EUSY0383101	CSP ,35 ,R/TP ,3.15x3.15x0.55 , ; ,IC,Sub PMIC		
7	U200	IC	EUSY0378301	DFN ,10 ,R/TP ,3-Axis Acceleration Sensor, 3*3 , ; ,IC,PMIC		
7	U202	IC	EUSY0200803	MFL ,8 ,R/TP ,Haptic Driver IC,2X2 , ; ,IC,Motor Driver		
7	U203	IC	EUSY0358801	,8 PIN,R/TP ,2x2 Proximity sensor Control IC , ; ,IC,CMOS		
7	U206	IC	EUSY0345901	WDFN ,8 PIN,R/TP ,2X2 Dual LDO 2.8V/2.8V 300mA/300mA , ; ,IC,LDO Voltage Regulator		
7	VA201	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	VA202	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SUSY	SPEAKER	SUSY0027507	ASSY ,8 ohm,90 dB,1812 mm,10mm(vertical) ; , , , , , , , ,[empty]		
4	SVCY00	CAMERA	SVCY0017301	CMOS ,MEGA ,5M AF [FPCB, Sony 5M 1/3.2"(IMX034), CCP2]		27
4	SVLM00	LCD MODULE	SVLM0028901	Main ,3.0" ,240*400 ,45.08*75 ,262K ,TFT ,TM BD663474 ,		E, 23
4	SWCC00	CABLE,COAXIAL	SWCC0005701	74 mm, LINE, ; , [empty] , [empty] , [empty] , [empty] , ,[empty]		29
3	SAFY	PCB ASSY,MAIN	SAFY0313301			
4	SAFB	PCB ASSY,MAIN,INSERT	SAFB0095501			
5	BRAH00	RESIN,PC	BRAH0001301	; , , , , [empty]	Black	
4	SAFF	PCB ASSY,MAIN,SMT	SAFF0226704			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0133401			
6	C127	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C128	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C130	INDUCTOR,CHIP	ELCH0001409	10 nH,J ,1005 ,R/TP ,PBFREE		
6	C241	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C242	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C243	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C245	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C246	CAP,TANTAL,CHIP	ECTH0001903	22 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C247	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C248	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C249	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C250	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C252	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C253	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C254	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C255	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C256	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C257	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C258	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C259	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C260	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C261	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C262	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C263	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C264	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C265	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C266	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C267	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP , , ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C268	CAP,CERAMIC,CHIP	ECCH0010501	7.5 pF,50V ,D ,X7R ,TC ,1005 ,R/TP , , ,C0G TYPE(No X7R) ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty]		
6	C270	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C301	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C302	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C306	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C308	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C311	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C312	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C315	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C317	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C319	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C321	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C322	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C323	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C325	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C327	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C329	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C330	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C331	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C332	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C333	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C334	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C335	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C336	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C337	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C338	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C339	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C340	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C341	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C342	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C343	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C404	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000138	390 pF,50V,K,X7R,HD,1005,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C408	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C409	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C410	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C411	CAP,CHIP,MAKER	ECZH0001120	3900 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C413	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C414	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C415	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C418	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C419	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C420	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C421	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C422	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C423	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C424	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C425	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C426	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C427	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C428	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C429	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C430	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C431	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C432	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C433	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C435	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C437	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C438	CAP,TANTAL,CHIP	ECTH0005703	22 uF,10V ,M ,L_ESR ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C439	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C440	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C441	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C442	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C443	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C444	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C445	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C446	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C447	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C448	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C449	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C450	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C451	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C452	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C453	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C454	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C455	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C456	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C457	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C458	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C459	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C460	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C461	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C462	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C465	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C466	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C467	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C470	CAP,CERAMIC,CHIP	ECCH0000138	390 pF,50V,K,X7R,HD,1005,R/TP		
6	C503	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C505	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C506	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	C509	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C510	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C511	CAP,CERAMIC,CHIP	ECCH0000157	15 nF,16V,K,X7R,HD,1005,R/TP		
6	C512	CAP,CERAMIC,CHIP	ECCH0000157	15 nF,16V,K,X7R,HD,1005,R/TP		
6	C513	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C514	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C517	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C518	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C519	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C522	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C523	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C526	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C527	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C528	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C529	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C531	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C532	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C536	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C538	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C539	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C540	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C541	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	CN401	CONNECTOR,I/O	ENRY0008701	5 , mm,ETC , , , , ,0.60MM ,[empty] ,RECEPTACLE ,[empty] ,[empty] ,		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	CN402	CONNECTOR,ETC	ENZY0022901	3 ,2.5 mm,ETC , ,		
6	D201	DIODE,SWITCHING	EDSY0010501	ESC ,30 V,100 mA,R/TP ,SWITCH DIODE		
6	D202	DIODE,SWITCHING	EDSY0010501	ESC ,30 V,100 mA,R/TP ,SWITCH DIODE		
6	D203	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D401	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	D402	DIODE,SWITCHING	EDSY0010501	ESC ,30 V,100 mA,R/TP ,SWITCH DIODE		
6	D403	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	FB401	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB402	FILTER,BEAD,CHIP	SFBH0007103	75 ohm,1005 ,CHIP BEAD, 300mA		
6	FB501	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	FB502	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	FB503	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB504	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB505	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	FB506	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL102	FILTER,SAW	SFSY0035002	2140 MHz,1.4*1.1*0.45 ,SMD ,2110M~2170M, IL 2.3, 5pin, U-U, 50_4-50_1.3, WCDMA BAND I Rx ,; ,2140 ,1.4*1.1*0.45 ,SMD ,R/TP		
6	FL401	FILTER,EMI/POWER	SFEY0015301	SMD ,Pb-free_Bais ,; ,Filter,LCR		
6	IC401	IC	EUSY0371201	WLP ,20 ,R/TP ,MUIC for 5Pin Micro USB ,; ,IC,Analog Switch		
6	L401	INDUCTOR,CHIP	ELCH0001556	270 nH,J ,1608 ,R/TP ,		
6	L402	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP ,; , ,0.3NH , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L403	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP ,; , ,0.3NH , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L404	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP ,; , ,0.3NH , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L405	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP ,; , ,0.3NH , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L501	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L502	INDUCTOR,SMD,POWER	ELCP0008007	3.3 uH,N ,2.5*2.0*1.0 ,R/TP ,MLCI Power ,; ,3.3 ,30% ,; ,; ,; ,SHIELD ,2.5X2X1MM ,[empty] ,[empty] ,Inductor,Wire Wound,Chip		
6	L503	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	R201	RES,CHIP,MAKER	ERHZ0000222	150 Kohm,1/16W ,F ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R202	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000265	300 Kohm,1/16W ,F ,1005 ,R/TP		
6	R204	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000286	4700 ohm,1/16W ,F ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R305	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R307	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R402	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R404	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R405	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R406	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R408	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP		
6	R409	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R412	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R414	RES,CHIP,MAKER	ERHZ0000318	80.6 Kohm,1/16W ,F ,1005 ,R/TP		
6	R417	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R419	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R422	RES,CHIP,MAKER	ERHZ0004201	121000 ohm,1/16W ,F ,1005 ,R/TP		
6	R423	RES,CHIP	ERHY0000105	51 ohm,1/16W,F,1005,R/TP		
6	R424	RES,CHIP	ERHY0000161	200K ohm,1/16W,F,1005,R/TP		
6	R501	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R502	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R503	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R504	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R505	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R506	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
6	R509	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R519	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	R521	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R522	PCB ASSY,MAIN,PAD OPEN	SAFO0000501	0OHM_1005_DNI		
6	U201	IC	EUSY0144701	SC70-5 ,5 PIN,R/TP ,INVERTER(Schmitt trigger), Pb Free		
6	U202	IC	EUSY0306201	Micro pak ,8 PIN,R/TP ,D Flip Flip		
6	U203	IC	EUSY0344203	BGA ,543 ,R/TP ,543CSP,HSUPA, Standalone AP, H.264, WVGA, 8MCAM,Turbo 32MB ,; ,IC,Digital Baseband Processor		
6	U302	IC	EUSY0380601	TFBGA ,137 ,ETC ,FULLY 1.8V 4G(LB/256Mx16) NAND+2G(DDR/16Mx4x32) SDRAM ,; ,IC,MCP		
6	U401	IC	EUSY0333701	TLLGA ,8 PIN,R/TP ,OVP		
6	U402	IC	EUSY0320201	TFBGA ,36 PIN,R/TP ,USB2.0 Transceiver, 3.5X3.5X0.8		
6	U405	IC	EUSY0342201	CSP ,137 PIN,R/TP ,PMIC, for MSM7xxx ,; ,IC,PMIC		
6	U501	IC	EUSY0363501	uMLF ,10 ,R/TP ,0.4ohm Audio Analog Switch ,; ,IC,Analog Switch		
6	U502	IC	EUSY0365301	Micro SMD ,20 ,R/TP ,Class D, Bypass ,; ,IC,Audio Sub System		
6	U503	MODULE,ETC	SMZY0019601	WLAN(11b/g)+Bluetooth+FM Module 9 x 7.8 x 1.2 (BCM4325) ,; ,Bluetooth		
6	U504	IC	EUSY0355701	PLP1010-4 ,4 PIN,R/TP ,150mA 2.8V Single LDO ,; ,IC,Voltage Regulator		
6	VA401	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	X201	VCTCXO	EXSK0007802	19.2 MHz,1.5 PPM,10 pF,SMD ,3.3*2.5*1.0 ,; , ,2PPM ,2.8V , , , ,SMD ,P/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	X401	X-TAL	EXXY0024301	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 , -40°C ~ +85°C, C0 1.05pF, C1 fF , , 32.768 ,20PPM , 12.5 , , SMD ,R/TP		
6	X501	TCXO	EXST0001901	26 MHz,2.5 PPM,10 pF,SMD ,32*15*1.0 ,TI_WL1251 , , ,2.5PPM ,2.8V , , , SMD ,R/TP		
6	ZD401	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	ZD402	DIODE,TVS	EDTY0008602	SOD-323 , 13.3 V,400 W,R/TP ,PB-FREE		
6	ZD403	DIODE,TVS	EDTY0008601	SOD-323 , 6 V,400 W,R/TP ,PB-FREE		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0130701			
6	C100	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C101	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C102	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C105	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C107	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C112	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C114	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C115	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C116	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C122	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C123	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C124	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C125	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C129	INDUCTOR,CHIP	ELCH0003826	3.3 nH,S ,1005 ,R/TP ,chip		
6	C132	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C133	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C135	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C136	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C138	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C139	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C142	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C143	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C144	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C145	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C146	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C147	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C148	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C149	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C150	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C151	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C152	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C153	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C154	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C155	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C156	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C157	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C158	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C159	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C160	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C161	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C162	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C163	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C164	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,		
6	C165	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C166	CAP,TANTAL,CHIP	ECTH0006001	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , [empty] , [empty] , [empty] ,7 OHM , [empty] , [empty] , [empty] , [empty]		
6	C167	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C168	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C169	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C170	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C171	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C172	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C173	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C174	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C176	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C177	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C178	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C179	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C181	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C182	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C183	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C185	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C186	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C187	INDUCTOR,CHIP	ELCH0004720	1.2 nH,S ,1005 ,R/TP ,		
6	C188	INDUCTOR,CHIP	ELCH0001056	2.7 nH,S ,1005 ,R/TP ,PBFREE		
6	C189	INDUCTOR,CHIP	ELCH0001056	2.7 nH,S ,1005 ,R/TP ,PBFREE		
6	C190	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C191	CAP,CERAMIC,CHIP	ECCH0000701	1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C192	INDUCTOR,CHIP	ELCH0001056	2.7 nH,S ,1005 ,R/TP ,PBFREE		



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C193	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C194	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C195	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C198	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C199	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C200	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C201	CAP,TANTAL,CHIP	ECTH0006001	10 uF,10V ,M ,STD ,1608 ,R/TP , , , [empty] , [empty] , [empty] , 7 OHM , [empty] , [empty] , [empty] , [empty]		
6	C204	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0000133	220 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C206	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C208	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C209	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C210	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	C211	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C213	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C214	INDUCTOR,CHIP	ELCH0001056	2.7 nH,S ,1005 ,R/TP ,PBFREE		
6	C215	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C216	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C217	INDUCTOR,CHIP	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,		
6	C218	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	C220	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C221	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C222	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C223	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C224	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C225	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C226	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	C269	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C434	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C436	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C463	CAP,TANTAL,CHIP	ECTH0005703	22 uF,10V ,M ,L ,ESR ,2012 ,R/TP , ; , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C464	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C504	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C547	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C548	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	CN501	CONNECTOR,BOARD TO BOARD	ENBY0042501	80 PIN,0.4 mm,ETC , , , , , 0.40MM , [empty] , FEMALE ,SMD ,R/TP , ,		
6	D501	DIODE,TVS	EDTY0009801	SOT-963 ,5 V,25 W,R/TP , , , , , , [empty] , [empty] ,2P ,1		
6	D502	DIODE,TVS	EDTY0009801	SOT-963 ,5 V,25 W,R/TP , , , , , , [empty] , [empty] ,2P ,1		
6	FL100	FILTER,SAW	SFSY0030003	881.5 MHz,1.4*1.1*0.6 ,SMD ,869M~894M, IL 2.3, 5pin, U-B, 50-200_82, W-BAND V Rx , ; ,881.5 ,1.4*1.1*0.6 ,SMD ,R/TP		
6	FL101	FILTER,SAW	SFSY0024301	942.5 MHz,1.4*1.1*0.6 ,SMD ,5pin, Unbal-Bal, 50//150		
6	FL103	FILTER,SAW	SFSY0024302	1842.5 MHz,1.4*1.1*0.6 ,SMD ,5pin, Unbal-Bal, 50//150		
6	FL104	FILTER,SAW	SFSY0024303	1960 MHz,1.4*1.1*0.6 ,SMD ,5pin, Unbal-Bal, 50//150		
6	FL105	DUPLEXER,IMT	SDMY0001601	897.5 MHz,942.5 MHz,2.5 dB,2.7 dB,50 dB,45 dB,3.0*2.5*1.25 ,SMD ,UMTS Band8 Rx Balanced Duplexer, SAW, 3025size , ; ,942.5 ,925to960 ,897.5 ,880to915 ,2.7 ,2.5 ,3.0x2.5x1.25 ,DUAL ,SMD , [empty]		
6	FL106	FILTER,SAW	SFSY0035001	2140 MHz,1.4*1.1*0.45 ,SMD ,2110M~2170M, IL 2.3, 5pin, U-B, 50-100_20, WCDMA BAND I Rx , ; ,2140 ,1.4*1.1*0.45 ,SMD ,R/TP		
6	FL107	FILTER,SAW	SFSY0037601	897.5 MHz,1.4*1.1*0.4 ,SMD ,880M~915M, IL 3.6, 5pin, U-U, 50-50, W-BAND VIII Tx , ; ,897.5 ,1.4*1.1*0.4 ,SMD ,R/TP		
6	FL108	FILTER,SAW	SFSY0035101	1950 MHz,1.4*1.1*0.45 ,SMD ,1920M~1980M, IL 3.2, 5pin, U-U, 50-50, WCDMA BAND I Tx , ; ,1950 ,1.4*1.1*0.45 ,SMD ,R/TP		
6	FL109	DUPLEXER,IMT	SDMY0001901	1950 MHz,2140 MHz,1.8 dB,2.4 dB,52 dB,43 dB,2.5*2.0*0.55 ,SMD ,Band1, 2520size, SAW, Rx unbal , ; ,2140 ,2110 to 2170 ,1950 ,1920 to 1980 ,2.4 ,1.8 ,2.5x2.0x0.55 ,DUAL ,SMD ,R/TP		
6	FL110	FILTER,SAW	SFSY0033403	1575.42 MHz,1.4*1.1*0.4 ,SMD ,1574.42M~1576.42M, IL 1.2, 5pin, U-U, 50-50, GPS HIGH ATTEN. , ; ,1575.42 ,1.4*1.1*0.4 ,SMD ,R/TP		
6	FL111	FILTER,SAW	SFSY0036601	1880 MHz,1.4*1.1*0.45 ,SMD ,1850.625M~1909.375M, IL 3.8, U-U, 50_0.3-50_0.3, USPCS Tx , ; ,1880 ,1.4*1.1*0.45 ,SMD ,R/TP		
6	FL112	DUPLEXER,IMT	SDMY0002401	1880 MHz,1960 MHz,3.2 dB,3.7 dB,53 dB,48 dB,3.0*2.5*1.0 ,SMD ,SAW, UMTS Band2, RTR6285 solution , ; ,1960 ,1932.4 to 1987.6 ,1880 ,1852.4 to 1907.6 ,3.7 ,3.2 ,3.0x2.5x1.0 ,DUAL ,SMD ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	L100	INDUCTOR,CHIP	ELCH0004720	1.2 nH,S ,1005 ,R/TP ,		
6	L101	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L102	INDUCTOR,CHIP	ELCH0003839	22 nH,J ,1005 ,R/TP ,MLCI		
6	L104	INDUCTOR,CHIP	ELCH0004714	18 nH,J ,1005 ,R/TP ,		
6	L106	INDUCTOR,CHIP	ELCH0003835	4.7 nH,S ,1005 ,R/TP ,MLCI		
6	L107	INDUCTOR,CHIP	ELCH0003835	4.7 nH,S ,1005 ,R/TP ,MLCI		
6	L108	INDUCTOR,CHIP	ELCH0003835	4.7 nH,S ,1005 ,R/TP ,MLCI		
6	L109	INDUCTOR,CHIP	ELCH0003826	3.3 nH,S ,1005 ,R/TP ,chip		
6	L110	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L111	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	L113	INDUCTOR,CHIP	ELCH0001409	10 nH,J ,1005 ,R/TP ,PBFREE		
6	L114	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	L115	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	L116	INDUCTOR,CHIP	ELCH0003815	2.7 nH,S ,1005 ,R/TP ,		
6	L117	INDUCTOR,CHIP	ELCH0003826	3.3 nH,S ,1005 ,R/TP ,chip		
6	L119	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L120	INDUCTOR,CHIP	ELCH0001412	1.8 nH,S ,1005 ,R/TP ,PBFREE		
6	L121	INDUCTOR,CHIP	ELCH0001408	6.8 nH,J ,1005 ,R/TP ,Pb Free		
6	L122	INDUCTOR,CHIP	ELCH0005010	1.8 nH,S ,1005 ,R/TP ,		
6	L123	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
6	L124	INDUCTOR,CHIP	ELCH0003815	2.7 nH,S ,1005 ,R/TP ,		
6	L125	CAP,CERAMIC,CHIP	ECCH0000196	0.75 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	L127	INDUCTOR,CHIP	ELCH0001057	3.9 nH,S ,1005 ,R/TP ,PBFREE		
6	R100	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R101	RES,CHIP,MAKER	ERHZ0000415	130 ohm,1/16W ,J ,1005 ,R/TP		
6	R102	RES,CHIP,MAKER	ERHZ0000415	130 ohm,1/16W ,J ,1005 ,R/TP		
6	R103	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0000456	2.2 ohm,1/16W ,J ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000517	91 ohm,1/16W ,J ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000517	91 ohm,1/16W ,J ,1005 ,R/TP		
6	R108	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R109	RES,CHIP,MAKER	ERHZ0003801	5.1 ohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0003801	5.1 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000495	56 ohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000348	12 ohm,1/16W ,F ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000506	6800 ohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R410	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R411	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R413	RES,CHIP,MAKER	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP		
6	R415	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R416	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R418	RES,CHIP,MAKER	ERHZ0000537	680000 ohm,1/16W ,F ,1005 ,R/TP		
6	R421	RES,CHIP,MAKER	ERHZ0003901	0.1 ohm,1/4W ,F ,2012 ,R/TP ; ,0.1 ,1% ,1/4W ,2012 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R511	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R512	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R513	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R514	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R515	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R516	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R517	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R518	RES,CHIP,MAKER	ERHZ0000420	150 ohm,1/16W ,J ,1005 ,R/TP		
6	R520	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	S501	CONN,SOCKET	ENSY0021401	8 PIN,ETC , , mm,		
6	SPFY	PCB,MAIN	SPFY0196001	FR-4 ,0.8 mm,STAGGERED-10 ,EIGEN MAIN ; , , , , , , , , , ,		H, 33
6	SW100	CONN,Rf SWITCH	ENWY0005301	,SMD , dB,H=1.85 ; ,3.00MM ,STRAIGHT ,RF ADAPTER ,SMD ,R/TP ,AU , ,		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	SW501	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	U100	CONN,RF SWITCH	ENWY0005601	,SMD , dB, , , ,0.30MM ,STRAIGHT ,SOCKET ,SMD ,[empty] ,[empty] , ,		
6	U101	RF MODULE,HANDSET	SMRH0004901	MHz, MHz, ,Tx Module(ASM + PAM) - WCDMA TriMode		
6	U102	IC	EUSY0344001	QFN ,68 ,R/TP ,Quad GSM, Tri WCDMA RF Transceiver ,, ,IC,Tx/Rx		
6	U103	COUPLER,RF DIRECTIONAL	SCDY0004401	19.4 dB,0.25 dB,32 dB,1.0*0.5*0.4 ,SMD ,Pb-free_DCN+JCDMA ,; ,[empty] ,874.5MHz ,101MHz ,SMD ,R/TP		
6	U104	PAM	SMPY0018801	28 dBm, %, A, dBc,28 dB,3x5 ,SMD ,3G Dual PAM B1+8. HELP ,; , , , , , , ,LGA ,R/TP ,14		
6	U105	COUPLER,RF DIRECTIONAL	SCDY0004301	20.5 dB,0.22 dB,34 dB,1.0*0.5*0.4 ,SMD ,Pb_free_KPCS+USPCS+WCDMA ,; ,[empty] ,1865MHz ,230MHz ,SMD ,R/TP		
6	U106	COUPLER,RF DIRECTIONAL	SCDY0004301	20.5 dB,0.22 dB,34 dB,1.0*0.5*0.4 ,SMD ,Pb_free_KPCS+USPCS+WCDMA ,; ,[empty] ,1865MHz ,230MHz ,SMD ,R/TP		
6	U107	PAM	SMPY0019501	29.5 dBm, %, A, dBc,29 dB,4x4x1.1 ,SMD ,WCDMA Band 2 Sinlge PAM. HELP3 ,; , , , , , , ,LGA ,R/TP ,10		
6	U108	MODULE,ETC	SMZY0021701	GPS LNA Module integrated Filter, 3.3x2.1x1.1 ,; ,RF Module		
6	U403	IC	EUSY0242303	DFN ,8 ,R/TP ,Fuel gauge ,; ,IC,CMOS		
6	U404	TR,FET,P-CHANNEL	EQFP0008601	DFN8 ,1.3 W,-20 V,-3.9 A,R/TP ,Intergrated power MOSFET with PNP Transistor		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.3 Accessory

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SBPL00	BATTERY PACK,LI-ION	SBPL0098701	3.7 V,1000 mAh,1 CELL,PRISMATIC ,553446,INNERPACK,WW ,; ,3.7 ,1000 ,200 ,PRISMATIC ,5.5X34X46 ,6.1X47X36.5 ,BLACK ,INNERPACK ,	BLACK	K, 43
대치		BATTERY PACK,LI-ION	SBPL0098001	3.7 V,1000 mAh,1 CELL,PRISMATIC ,553446, INNERPACK ,; ,3.7 ,1000 ,200 ,PRISMATIC ,5.5X34X46 ,6.1X37X47 ,BLACK ,INNERPACK ,		
3	SGDY00	DATA CABLE	SGDY0014302	; ,[empty] ,[empty] ,1.2M , ,BLACK ,1.2m, 4, Shield case MicroUSB, ID resistor open ,N		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003741	; ,RMS 20mW(0.56V,RMS) ,16Ohm+-2.4Ohm 1KHZ ,116dB+-3dB 1KHZ,3mW ,116dB 1KHZ ,96dB 100HZ ,[empty] ,BLACK ,5P MICRO USB CONNECTOR , MICRO USB 5P ,Earphone,Stereo		
3	SSAD00	ADAPTOR,AC-DC	SSAD0032901	100-240V ,5060 Hz,5.1 V,0.7 A,CE ,AC-DC ADAPTOR ,; ,90Vac~264Vac ,4.75Vdc~5.25Vdc ,700mA ,5060 , ,WALL 3P ,USB ,		
대치		ADAPTOR,AC-DC	SSAD0032902	100-240V ,5060 Hz,5.1 V,0.7 A,CE ,AC-DC ADAPTOR ,; ,90Vac~264Vac ,4.75Vdc~5.25Vdc ,700mA ,5060 , ,WALL 2P ,USB ,		
6	MHBY00	HANDSTRAP	MHBY0007901	COMPLEX, (empty), , , , ,	SILVER	11
7	MHBY00	HANDSTRAP	MHBY0008701	CUTTING, STS, , , , ,	SILVER	